DOCUMENT RESUME

ED 029 438 EC 003 957

Some Recent Advances and Research in Vocational Evaluation.
Pennsylvania Rehabilitation Center, Johnstown.
Spons Agency-Vocational Rehabilitation Administration (DHEW), Washington, D.C.
Pub Date [67]
Note-86p.; Proceedings from Seminar held at Pennsylvania Rehabilitation Center, Johnstown, Pennsylvania, January 26-27, 1967.
EDRS Price MF-$0.50 HC-$4.40
Descriptors-Aptitude Tests, Career Planning, Counselor Role, *Evaluation, Evaluation Techniques, *Exceptional Child Services, Individual Characteristics, Job Training, Mentally Handicapped, Prediction, Research Reviews (Publications), Sheltered Workshops, *Vocational Counseling, *Vocational Rehabilitation, Vocational Training Centers, Work Experience Programs
Identifiers-Pennsylvania

The proceedings include five papers from a seminar designed to train rehabilitation personnel in the procedures, theories, and aims of work evaluation. Morton H. Bregman discusses the use of vocational evaluation in the counseling process; Henry Cobb describes methods of predicting vocational adjustment in the mentally retarded; and John Campbell considers work evaluation in a community evaluation center. Also included are Richard Hill's description of a sheltered workshop in Vermont which performs progressive contract services and William Steiner's review of methods of determining the levels of vocational capability and job potential. Question and answer sections follow the last four papers. A list is appended of test descriptions to be used as an aid to interpreting results on the General Aptitude Test Battery administered by the Pennsylvania Evaluation Department, which Steiner supervises. (JK)

ED029438

RESEARCH & TRAINING CENTER
IN VOCATIONAL REHABILITATION
of the University of Pittsburgh
Johnstown, Pennsylvania

SOME RECENT ADVANCES AND RESEARCH IN VOCATIONAL EVALUATION

Seminar Conducted
January 26-27, 1967

Supported by a grant from the
Social & Rehabilitation Services
Department of Health, Education, & Welfare

RT-14

EC003957

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Seminar - January 26-27, 1967

SOME RECENT ADVANCES AND RESEARCH
IN
VOCATIONAL EVALUATION

Research and Training Center in Vocational Rehabilitation
of the University of Pittsburgh
(RT-14)

In Cooperation With
Pennsylvania Rehabilitation Center
727 Goucher Street
Johnstown, Pennsylvania
15905

The Research and Training Center in Vocational Rehabilitation operates under a grant from the Social and Rehabilitation Services of the Department of Health, Education, and Welfare. A cooperative effort between the University of Pittsburgh and the Pennsylvania Bureau of Vocational Rehabilitation, the Research and Training Center provides training programs for state and private rehabilitation agency personnel, and conducts research projects in the rehabilitation process.

FOREWORD

This two-day seminar was arranged for the express purpose of training rehabilitation personnel in the procedures, theories, and aims of work evaluation. It was designed to discuss and try to find better ways of utilizing the knowledge we now have to meeet the demands for comprehensive or total rehabilitation of the handicapped.

Meetings were held at the Pennsylvania Rehabilitation Center (PRC) in Johnstown. PRC is the largest comprehensive rehabilitation center in the United States, and lends itself favorably to studying the various vocational evaluation techniques employed, and their utilization in the placement and subsequent evaluation of clients in vocational training.

This seminar was made possible by the Vocational Rehabilitation Administration of the Department of Health, Education and Welfare through a grant to the Research and Training Center in Vocational Rehabilitation as a cooperative effort with the University of Pittsburgh and the Pennsylvania Bureau of Vocational Rehabilitation.

It is hoped that the formal presentations and discussions presented in these proceedings will provide insights into the nature of new programs currently underway in selected VRA-supported projects and selected rehabilitation facilities.

AGENDA

Thursday, January 26

8:30 a.m.	Registration and coffee
9:30 a.m.	Welcome Joseph A. Pauza, Administrator Pennsylvania Rehabilitation Center Karl Egerman, Ph.D., Director Research and Training Center
10:30 a.m.	Henry V. Cobb, Ph.D. Chairman, Department of Psychology University of South Dakota
12:00 Noon	Lunch
1:00 p.m.	Richard Hill, Director Vermont Division of Vocational Rehabilitation
2:30 p.m.	Coffee
3:00 p.m.	Tour of Pennsylvania Rehabilitation Center
5:30 p.m.	Dinner and evening meeting

Friday, January 27

9:30 a.m.	William Steiner, Supervisor Vocational Evaluation Unit Pennsylvania Rehabilitation Center
10:30 a.m.	Coffee
11:00 a.m.	John Campbell, Associate Director Vocational Guidance and Rehabilitation Services Cleveland, Ohio
12:00 Noon	Lunch
12:45 p.m.	Morton Bregman, Coordinator of Professional Services Vocational Rehabilitation Center of Allegheny County
1:45 p.m.	Summary and closing remarks

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THE USE AND MISUSE OF VOCATIONAL EVALUATION IN THE COUNSELING PROCESS

Morton H. Bregman

Coordinator of Professional Services
Vocational Rehabilitation Center
of Allegheny County
Pittsburgh, Pennsylvania

In the past few years we have seen a marked expansion in the use of the process of "...assessing the individual both as to his work potentials and work adjustment as these factors relate to the achievement of a specific vocational objective," (1) which has come to be known as "vocational evaluation." While this process is known by many names such as: Guidance Test Class, Work Sample Testing, Reality Testing, Miniature Job Sample Testing, Prevocational or Vocational Evaluation, Testing Orientation and Work Evaluation in Rehabilitation (TOWER), there seems to be general agreement that the utilization of actual or simulated, industrial, service, or commercial operations are an effective instrument in measuring the disabled individuals potentials for "...integration or re-integration into society." (2)

The field of rehabilitation has hailed vocational evaluation as the panacea in overcoming all of the apparent limitations of standardized psychological tests. Psychologists have questioned its use because of the apparent lack of consideration of the classic requirements of reliability and validity in the construction and use of work samples. (Despite this objection it has the attraction of face validity) (3) Vocational evaluation has been used and abused, understood and misunderstood. The literature has described how to organize a unit, how to develop work samples. Evaluators have been trained in short-term courses, on-the-job, and now at least one university is planning to offer a Master's degree program to educate evaluators, even though there are differences among facilities as to what the evaluator does, and what his trainin should be. In our agency we hire an individual as an evaluator because of the specialized skill that he brings to the unit. For example, the clerical evaluator is a business major, the industrial service evaluator is a home economist. We believe that the evaluator should be a master of one area, and not a jack of all trades. Not withstanding all of the questions and apparent shortcomings, it has become evident that the process of vocational evaluation is here to stay.

Speiser and Cohen (4) and the Association of Rehabilitation Centers (5), have both found that over 50% of the rehabilitation facilities responding to a questionnaire concerning the services they provide indicated that they have vocational or prevocational evaluation programs.

Of interest is the fact that 60% of these units have only been in operation for less than five years, with the majority having been started in the past two years. The passage of the Vocational Rehabilitation Amendments of 1965 which encourages the development of vocational evaluation programs, particularly for the severely disabled, will undoubtedly lead to a skyrocketing of the number of facilities which will utilize vocational evaluation as a basis for, or part of their programs.

With the increasing use of vocational evaluation in rehabilitation, one might feel secure in conjecturing that there is a clear understanding of the results that can be expected from the use of this technique, how these results are achieved, who should be referred, and above all where it fits into the overall pattern of rehabilitation servises. However, we have not yet reached the point where there are clear cut answers to any of these questions. We are operating on the assumption that we have a unifying theory and approach to vocational evaluation, but in actuality there may be as many systems of evaluation as facilities using them. Until we come to grips with the problem there will continue to be confusion on the part of facilities who are developing programs, counselors who are encouraged to use it, and particularly the clients themselves.

For a moment let me delve into the history of vocational evaluation. There are several avenues which have led to our current understanding and use of this technique. The early apprenticeship system encouraged the prospective apprentice to try-out in several trades before selecting the one he wanted to follow. In the same vein in World War I the Port-Villex School (6) in Belgium felt that the only way the disabled soldier could be helped to select and appropriate trade training program was to have him try-out in several trade classes. On the basis of this try-out he could then select the course that he was interested in, and had the ability to complete. Another avenue was the development of scientific job analysis, and the early work of Munsterberg who was one of the pioneers in the field of psychological testing. He was confronted with the problem of developing a test to select street car operators for the Boston Railway Company. After a great deal of thought he decided to build a model street car and try-out prospective operators on this model. Psychologists have dropped this approach in favor of the current use of paper and pencil tests.

A third basis of evaluation relates to the approach taken in the U.S. Army Hospitals in World War I. They developed the idea that the wounded soldier would be "...helped to find a healthy, optimistic, and creative attitude toward life," (7) through involvement in work activities around the hospital.

With the exception of the Dynwoody School in Cleveland the concept of vocational evaluation was not used formally untill 1936. At that time the Institute for the Crippled and Disabled brought together elements of their various training programs into a central unit called Guidance Test Class. This was done to provide clients with an opportunity to explore their potentials for, and interest in the various trade classes, in some organized way. Since that time we have seen the approach broadened, not only in terms of the number of centers using evaluation, but also in terms of the scope and variety of work samples that are used. More important however, the expansion has occured in terms of the purposes. Thus the three historical bases to evaluation, namely: job try-out, work sample testing, and therapeutic milieu are currently an intergral part of the process which is being used:

1. To observe behavior.
2. To determine potentials for training, and/or placement.
3. To determine potentials for rehabilitation services.
4. As a therapeutic milieu for effecting change in vocational self concept.
5. As a diagnostic tool.
6. As a prognostic tool.

Within the facilities themselves the evaluation may take place in a separate unit, with its own staff. It may be part of a workshop, it may be part of a total constellation of comprehensive rehabilitation services. In some programs clients are paid and not in others. Our own approach is to have a separate unit which, however, is closely integrated with our workshop. We conceive that the workshop focuses on work adjustment and evaluation focuses on the diagnosis of vocational handicaps as well as aptitudes, interest and abilities. Clients are not paid in evaluation but are in the workshops.

With all of the present dialogue and claims concerning evaluation, is it any wonder that the counselor may be troubled as to how it fits into his frame of reference when he is encouraged to refer his clients for vocational evaluation. (I am referring both to the BVR counselor and the facility counselor.) He is not quite sure of who can benefit, and why, to what extent can he rely on the data provided him after evaluation. Let us try to resolve some of this dilema by suggesting that vocational evaluation can be all that we have said it is, and that the problem relates to how it is used, rather than what it is. Use not in terms of the rehabilitation process, but rather in a somewhat more narrow sense in terms of the counseling process itself.

Why counseling? If we examine counseling it can be seen that it is a process of the formulation of questions or hypothesis concerning the client and his behaviors, with the client providing the answers which can then act as the framework for further questions with the ultimate objective to ...help individuals toward overcoming obstacles to their personal growth, wherever these may be encountered and toward achieving optimum development of their personal resources! (8) It is only the client who can provide the questions and answers, but it is the counselor who must determine what are the real questions. For example, if a client says, "I can't find a job," it may be because he hasn't looked, or because he is applying for jobs beyond his capabilities, or even that he hates his mother. The counselor must explore each of these hypotheses with his client, to determine which are correct and which are incorrect. These answers then provide the basis for further exploration until the goals for that client have been achieved. In the course of these explorations the counselor may use a variety of tools to aid him. For example, if a high school graduate asks the counselor what career he should follow, the counseling process is generally initiated by asking if he has the potential for higher education. The counselor examines transcripts, test scores, may administer additional tests, observes behavior to provide answers to that first question. If the information substantiates the hypothesis then he can complete college, the client can then be helped to explore occupations which require college level training. However there may be other factors, such as personality problems, which interfere with the attainment of goals consistent with the clients intellectual ability. We may then explore these questions with continued interviews, personality tests, or psychiatric interviews. As we continue this process the client, either verbally or through our diagnostic tools, tells the counselor that he is or is not on the right track. When he is, that avenue is followed until a logical conclusion is reached. Logical not to the counselor, but to the client. After all, he is the one who must act. Thus "classical counseling" becomes a verbal exploration with the use of diagnostic instruments as an adjunct to the process, to provide a foundation for future action. Obviously this is an oversimplification of a complex process. However, if we examine vocational evaluation from this frame of reference it can be viewed as a tool for the explorations of the counselor's, and client's, questions concerning the handicaps to, as well as the assets for, vocational planning.

When a counselor sees his client for the first time, he is generally confronted with the statement, "I want a job." The first step is to initiate diagnostic procedures to determine (1) whether the client has a disability, 2 what it is, and (3 is it correctable. The counselor must then determine the extent to which these disabilities handicap the individual in the attainment of a vocational objective, and 4 what can the client do. For many clients the answers to number 3 and 4 can be derived through interviewing, checking of references, or psychological testing. However, in many instances the counselor is confronted with the problem that he has all this information, but for some reason the client does not accept the interpretation. For example, the machinist who has lost a leg, and now has a well fitting prothesis. The preliminary data reveals that he has the potentials to return to his former occupation, but no matter how much the counselor tries to convince the client, he says, you know I can't do that work anymore. In this instance the counselor can hypothesize that the only way the client will develop an understanding that he can do his former job is to place him in an evaluation unit so that he can see for himself that he can do the work. Ideally, the client will then be able to act on this information, and return to his former employment. If this does not occur, then other questions must be raised. Perhaps he really doesn't want to be a machinist, or any one of a multitude of hypothesis which can be raised. In this case the evaluation unit serves to raise additional questions which require further exploration. But why is this approach required? Why can't the client act upon the information obtained through psychological tests? Reissman, (9) in his formulation of learning styles, suggests that we can only communicate to the individual through his characteristic learning style. These briefly are oral, verbal, and physical. Many of our clients are physical learners and can only perceive their vocational strengths and weaknesses through handling an object. The fact that people who score high on the Purdue Pegboard make excellent butter wrappers, has no meaning to the physical learner when interpreted verbally.

In another case the counselor can be confronted with the situation in which classical diagnostic procedures are ineffective in determining the individuals pattern of interests, abilities, and aptitudes. For example, if the client is unable to read, what patterns can be measured on standardized tests? The only way we can develop an understanding of his abilities is to have him go through a series of graded vocational activities. Thus the hypothesis, what can this client do, can be explored through the use of the process of vocational evaluation. For the "retarded", or cerebral palsied, or mental patient, the vocational evaluation unit provides the opportunity not only to explore a number of vocational areas, but also it is becoming increasingly important as a technique for the determination of problems which may be interfering with the assessment of vocational potential. Thus as a tool of the counselor the evaluation unit is ideally geared to exploring a number of hypotheses and more often than not, the program raises further questions concerning the services required by a client.

What you must keep in mind is that vocational evaluation can provide the information, but the counselor must use it. It does not do anything by itself. You must provide the questions, and the frame of reference. Questions such as:

1. Can this client be trained to be an auto mechanic?
2. Can this client be placed as a janitor?
3. What can this client do?
4. What are the factors which may be interfering with his vocational potentials?

and the myriad of other questions that you have about your client. Incidentally, in our own agency one of the frustrations of the evaluator is when the counselor says evaluate this client, period. He wants to know where to begin, and more important why is he being evaluated. This then provided the starting point for the process.

In our own program we have spent many hours considering how we can utilize the evaluation unit most effectively. At first we concentrated on the assessment of vocational aptitudes, interests, and abilities, to provide information which formed the basis of our counseling. In recent years we have come to realize that evaluation can provide a much broader diagnosis of the client's handicaps. It was only last week that we discussed a client who was spending all of his time roaming around the unit, and talking to others, to the point where his behavior was interfering with our ability to develop a picture of his aptitudes. The staff decided that we must develop a plan to control this behavior, and once this objective has been accomplished we can then continue the evaluation. In this instance the vocational evaluation had evaluated this client's handicap, and provided the basis for the next step. In another case a young man was referred, and on the basis of preliminary screening, including interviews and psychological tests, it was determined that he had the potential for college level work. However, his aspiration was to be an auto-mechanics area that he would change his mind. As it happened, he found that area very difficult, and is presently in college. Thus, the counselor's hypothesis was substantiated, and he could then help the client achieve a "realistic" goal.

One of the major questions confronting the counselor is who should he refer for evaluation. As suggested earlier, it is a process ideally geared to the physical learner. I am not completely sure, at this point, how we can determine who is the physical learner, but in general he is the person who has found it difficult to learn academic subjects in school, or a person who has been engaged in manual or service occupations.

Another guideline is suggested by Gorthy. (10) He states that vocational evaluation is ideally suited for those individuals

> "...whose vocational fitness or lack thereof are not readily apparent... the vocational evaluation will reveal the extent to which these handicapped individuals are capable of obtaining either limited or ultimate objectives."

Not withstanding these general guidelines, the question has been asked by our own staff, who can we serve? In our own exploration of that problem the answer is not who, but rather what problems can we deal with. The evaluation program can identify the problems, and from that we can then determine whether we have the expertise to solve the problem. Let me clarify. Consider the young man I alluded to earlier whose problem was the roaming and over-verbalization, which were interfering with the evaluation process. There could be several reasons for this behavior. (1) Perhaps he had a medical condition which manifests itself in over-verbalization. In this instance we have to ask the question, can it be controlled through medical intervention? However, the key to this young man's problem was that he had spent five years in his home looking at four walls, talking only to himself and to the radio, and occasionally his mother. Thus, it became evident that if we were to evaluate his vocational potentials we had to eliminate this primary problem. The staff then hypothesized that he needed a controlled environment working on a one-step simple activity where we could begin to apply pressures to eliminate over-verbalization in the work setting. He also needed to have an opportunity to socialize with others, in the non-work setting. To accomplish this objective he was placed in our workshop. We then hypothesized that once the over-verbalization is eliminated, we can move him back to the evaluation unit for determination of his vocational potentials. In this sense the unit provides the diagnosis of the key problem, the staff provides the reasons why, and the workshop provides the place where we can put into practice the plan that we developed. In this instance, the evaluation unit played a dual role, for the determination of the problem, and then for the determination of the client's aptitudes and ability. But all of these do not happen by themselves. There must be active participation of the counselor's part, even if only to supervise the plan.

One potential danger in the use of vocational evaluation is for the counselor to expect more than the unit can give. I have described what I consider to be the many possibilities in evaluation. Certainly I have used our own program as a model, wherein we have tried to provide a broad base of understanding of the potentials of such a program. But not all evaluation programs can answer all the questions you may have, not even ours. You must know the questions which can be answered, and use the various programs at your disposal selectively.

In summary, the misuse of vocational evaluation in the counseling process comes from a lack of understanding of where the counselor fits into the process. He must formulate questions. He cannot expect the evaluator to provide answers in a vacuum. He cannot expect evaluation by itself to change behavior, no more than we can expect psychological tests by themselves to change behavior, or develop understanding in the client. The counselor must interpret to the client why he is going through all this rigamarole just to get a job. He must interpret the findings to the client. I wonder how anyone of us would feel if we were demped into a program for eight or ten weeks, or even more, without knowing why, or knowing how we were doing. We would resist, and perhaps be unmotivated. The counselor must develop a treatment plan on the basis of the information he recieved. By treatment, I mean training, placement, behavior modification, not psychotherapy. It is a tool to be used, but not abused!

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PREDICTING VOCATIONAL ADJUSTMENT IN THE MENTALLY RETARDED

Henry V. Cobb, Ph. D.

Chairman, Department of Psychology
University of South Dakota

My particular interest in rehabilitation has been with the mentally retarded both through research and through the attempt to develop programs of education and rehabilitation to enable the retarded to take their place in society which has hitherto extensively rejected them. I gather that your interests as vocational counselors are quite varied, that you deal with various types of disability categories and in a variety of different ways. So, while I direct my comments particularly to the subject of the mentally retarded, I hope some of them will be applicable to your particular concerns, because many basic questions will go across the board.

The particular field I have been concerned with for the last several years grew out of an interest in VRA to find out what the outcomes have been of some research projects which they had sponsored. There are a number of such projects designed to determine how we can, and how well we can, predict the vocational adjustment of the mentally retarded in adult life. How far can we see ahead? How much can we see ahead? What sort of determinations can be made in order to guide the training and rehabilitative process to its most effective conclusion? The problem of predictive evaluation, of course, runs all through the rehabilitation program. How do you know what to do unless you have some idea of the probable outcome? A good deal has been done in this connection in relation to various categories of disability.

Now, I am not going to be technical here; I am going to deal rather with concepts and problems because I must be frank to say that so far the investigations I have been making lead rather to more questions than to final answers. I think we still have a long way to go before we really have nice, neat, predictive procedures that will give us firm answers as to what lies ahead for the individual client. I think we have to clarify what we are trying to do, and to see clearly what some of the problems are before we rely too heavily on premature conclusions.

Let us start out with just a brief consideration of what the objectives of the vocational counselor are. What is the vocational counselor trying to do? In this I want first of all to make a rather obvious contrast: the contrast between the process of personnel selection and the process of adjustment counseling. I am sure I don't really need to make this contrast to you because as counselors I think you understand this difference already. In personnel selection, we start off with a particular function, a particular job, or a particular operation, or a particular business, whatever it may be, and the purpose is to fill slots. We have so many places for so many people, and these people are supposed to perform certain functions and we want them to perform these functions successfully. Our job in personnel selection, then, is to pick the people who will fill these slots with the maximum probability of success, and the minimum probability of failure. We can use all the information that is available to us in determining where the probability of success lies and where the probability of failure lies. We will establish cutting points in terms of test scores or whatever other predictors we are using in order to select that group of people who will *least* likely let us down and will *most* likely be successful. That is the nature of personnel selection and it is a fine art, used extensively in business and industry where the cost of failure is part of the production cost, and they want to keep that at a minimum. On the other hand, adjustment counseling begins with the person. Here is a person for who we want to provide services which will maximize his function as a member of society, as a productive part of the communtiy, to live as full and whole a life as possible. Starting with the individual, the aim is to work with him under the best possible conditions. For this we want to predict the probable outcomes of using various treatment procedures, and to find that combination of procedures which will maximize his probable success and minimize his probable failure. The criterion here is the person, whereas in personnel selection the criterion was the security of the enterprise or for which you are finding people. Here we are finding or doing something for the person; there we were doing something for the particular slot in which the person is fitted.

Obviously, these are two quite different aims and obviously, your concern is with the second. Yet, I think it is necessary to point out that often we do confuse the two. Often we have primarily in mind the situation within which we are operating as counselors, and are concerned with the criteria by which *our* success is to be measured. Often we are confused as to the real values that we are aiming at. I am sure that in Pennsylvania this is long since past, but in some places the success of a vocational counselor has been measured in the number of people that he has successfully "rehabilitated". You have seen that phraseology, I am sure, time after time. If that is the measure of a successful counselor, then it is up to him to obtain a maximum score. You get a maximum score when you have the most successes with the fewest failures, and you thereby immediately fall into the role of personnel selection. You are selection people who will succeed for you, and avoiding people who will fail for you. This is a natural human tendency to seek the rewards where they may be found, but often we fall into confusion as to what we are really trying to do.

Sometimes we are confronted with this word "feasibility". This is the question with respect to any client: is it feasible to provide training and rehabilitative services for him? Now, as soon as you try to answer the question of feasibility, you are talking about probability. You are talking about his possible success or failure in terms of some criterion. If you take the broad criterion of employability, then you are asking yourself, will this person be successful in terms of employability if we take him under our wing and provide him with training services? You are making a prediction and if you are not careful you may predict out some individuals who may, in fact, succeed, and you may be inclined to regard as feasible only a limited proportion of your personnel.

I am suggesting here, you see, that we keep our aims clear. If we are seriously concerned with adjustment counseling then when we talk about feasibility, we will not ask, "is it feasible to put the client in this particular training process which we have going?", but we will ask, rather, "what is feasible for this individual, and what are the alternatives among which we can select a program, and a course of training?" Again, the role of the vocational counselor is to serve the individual person, not merely to select the most probable successes from a range of candidates.

Assuming, there, that what we want is information which will enable us to make the best possible program arrangement for the individual client, how do we go about obtaining it? The first thing to recognize is that predictive information is needed not at one time only, but at many successive times along the rehabilitation route, and this information takes many forms. We have already mentioned the question of feasibility. This is part of the intake procedure. When you are first considering a client, you consider in what terms is it possible to serve this client. Feasibility determination is then one sort of evaluation, based on whatever information is available at the outset. But then one has to narrow this down and evaluate the client in terms of the type of training that would be most productive. Where do you start out with this person? at what level? in what sort of setting? in what sort of training? what kind of treatment? The evaluation then is based on the particular description of the individuals and his characteristics obtainable at intake.

But then as training is instituted, and treatment is provided, one makes evaluations along the way. How do you move this person through a course of training? What determines when he is ready for the next step? What determines what step follows from the step that he is already in? What determines whether you retain him in training or whether you terminate the process?

What determines when he is ready for those stages of training when we place him in some kind of employment?

When do you regard the case closed? Closure of a case involves just as much prediction as opening a case, because you are predicting that this person is now equipped to function under normally operating social arrangements, so that your services are no longer required. When do you reach that point, and what criteria do you use for making that kind of judgment?

In arriving at the decisions along the way there are some particular areas about which we are concerned and about which we make predictions. Occupational selection, of course, is one. What sorts of things can this individual be equipped to do? What kind of role can we expect him to play in the economic life in society? We are also concerned with the other aspects of the person which surround the fulfilling of occupational roles. One works, of course, only during certain portions on one's living time. The rest of the time one is doing all sorts of other things which have profound bearing on how effectively one works. Although we call ourselves vocational rehabilitation counselors, we cannot isolate vocation as work from the rest of the process of living. So one makes predictive evaluations of all these things as well.

Evaluation has many points of attack but in every case it involves using presently obtainable information in order to make some kind of prediction as a guide to action. What, then, are the requirements for effective predictive evaluation? Basically two major kinds of information are needed. On the one hand, we have to know what it is that we are trying to predict and how this can be measured. What is the outcome or the end result that we are looking for? In other words, what are the criteria in terms of which we make a prediction? It seems simple, but in fact the selection of criteria is a tremendously complicated business.

When we talk about successful adjustment, what are we really talking about? Often we narrow it down and define it very specifically. We say, the criterion of successful adjustment is the ability to hold a job. Well, hold a job? Hold a job how long? Hold a job under what sorts of working conditions? Hold a job at what level of complexity? Even holding a job is a complex matter. But we find as we explore the criteria that there are many, many others. I will mention a little later a particular study which analyzed the judgments made by ten experts in the field of mental retardation. The investor came up with a total of 141 specific criteria of success, which then had to be factor analyzed in order to be handled in a meaningful way.

If I were to ask you what *you* mean by success, what sorts of outcome you are really looking for in your work, you would probably come up with quite a number of categories, within which you would want the outcome of the person to be judged. One can organize these criteria in all sorts of ways. I think they generally fall under about five headings.

1. *Personal factors.* These are factors which are commonly subsumed under the rather vague term "self-concept," or "self-adjustment." This in itself is a rather general thing, and needs to be broken down into parts. For example, among the personal factors are the image the has of himself. We say the well-adjusted person is one who describes himself "realistically" or in some degree "idealistically" in terms of what he hopes to obtain. The badly adjusted person has very mixed up notions about who he is, what he is like, what he is good for, what he can do, and what he really wants. Along with the descriptive self-image there is also self-esteem, the value that one places upon oneself, the degree of self-acceptance or self-rejection, and the contentment or discontent with being as one finds himself. The self-concept, there, includes all the attributes of the person as he sees himself and as he evaluates himself with all his capabilities and limitations, and the way in which he identifies himself as an individual person. Another part of the personal factors consists in the goals a person has and how he aspires to them. The aspiration levels of the person which constitute a part of his self-system include his responses to success and failure, his ability to meet frustration, his emotional stability in general. Above all his control and defense systems determine how he manages his personal existance. The extent to which he has control of his resources so that he can utilize them, the extent to which he employs psychological defense systems in order to manage frustration or to defend himself against hurt, all of these fall in the area of personal factors that are involved in what we call a successful life. The textbooks and treatises on personality will provide you, I am sure, with thousands of notions that you can develop in relation to the personal aspect of the individual. I am also sure that if we ask you what you mean by a successful rehabilitation you would come up with many terms that would fall into this particular group.

2. There is another group of terms that we would subsume under the title of *self-management*. This is different from the internal view and evaluation of oneself. Rather, this is the way one handles the affairs of everyday life that call for individual responsibility. It includes the ordinary necessities of everyday life: the simple duties of feeding and clothing; habitation, that is, where and how one lives; orientation to the

surrounding world, being located in space and time so that one moves effectively in these reference points. What can a person do for himself that people would ordinarily do for themselves? Adequate adjustment again can be measured by these criteria.

3. The third category would be in interpersonal relationships. The person is not an isolate. He is a person among other persons, and we are here concerned with the ways in which the person interacts with others. Family ties, family relationships; friendships, affectional interchanges between one person and another, and the stability of such affectional behavior; social-sexual relationships, marriage, children; these are some of the principal ways in which people interact as persons with one another. This constitutes an area of experience which I know we all see as of vital importance. Where this is disturbed, almost everything else is disturbed. So this would be a third major basket into which we could put the criteria for successful adjustment.

4. In the fourth place another set of social relationships. But these we might call "impersonal social transactions." A great deal of our normal everyday lives involves dealing with people, not as individuals, as in terms of the roles that they perform. We go to the store and we deal with the clerk. We come to the cashier at the end of the cafeteria line. We engage in these transactions which constitute the network or fiber of social behavior in terms of which we must live. This provides the security for the fundamental operations which sustain life in society and culture in general. It includes the commercial transactions of everyday life, transportational transactions, legal transactions. Obeying the law and conforming to the legal requirements of society may become very complicated, it is involving the patterns of behavior, the mores and customs of the community in terms of such basic transactions as property relationships, taxation, life insurance, civic activity of all sorts, and voting. One wants to know the extent to which an individual client is going to be able to do these things.

5. Then in the fifth category we have productive behavior. This would include job skills of all kinds, perceptual motor tasks, the verbal tasks which are involved in many jobs, the integrated behavior of operations, machine and tool management, all those things which are involved in the production of goods and services. The occupational variables which determine the production contrast of the clients potential economic employment.

As I have looked at the wide range of possible criteria for successful adult adjustment, it has seemed to me that they all fall into these five major categories. Taking altogether, what we are asking is, what goes into the making of a full and adequate life: the personal self-related elements of experience, the self management of the ordinary things, the interpersonal ties that we have, the impersonal social relationships, the productive behavior in which we use our capabilities to produce goods and services. These categories cannot be taken singly, in isolation from one another, but form a network.

As a matter of fact, if we start talking about employment as a criterion, we immediately find ourselves drawing in elements from all five major categories. If we want to predict employability, we find ourselves having to predict all these other things which go above with it.

Let us now talk about another aspect of the evaluative process which also complicates things.

There are so many situational variables which affect the life history and rehabilitation of a client that we cannot develop predictive norms which will work everywhere for all people in the same way. What produces successful functioning in one setting does not necessarily produce successful functioning in another setting. Maybe this would be a little clearer if I indicate some of the kinds of variables that I have in mind here. Geography, for example, makes a difference in the way we look at possibilities for people. Here you are set in the middle of the mountains. Does this make any difference in the kinds of treatment and training and the kinds of goals, the kinds of objectives that would be appropriate to people you serve in this particular locality? Compare that with the great plains out where I live. It's a very different setting. The climatic conditions are different. As you go farther south, climatic conditions are very different again. You have to deal with people in terms of geographic and climatic variables. You cannot just assume that people in one place will operate as do people in other places. Demographic variables of all kinds make a difference, the distinction between rural and urban for example, because people in cities behave differently in many respects from people living in the country. Population density, the size of the community in which people are living and operating, ethnic variables, patterns of culture, which generate not only different ways of behaving, but different value systems, different goals, different objectives. Economic variables which may shift and change from time to time make a great difference in what we can predict. We have been living through a period of prosperity in which employment opportunities are high. Should we go into a period of economic depression, what difference would this make in the way in which our rehabiltative efforts work out? The nature of the labor force at any time, the occupational patterns of the community of the region, all these are situational variables which affect our ability to predict what the outcome will be in the individual case.

We have talked about criterion variables and situational variables, now let us go over to another side of this prediction criterion relationship. What sorts of information can we make use of in order to predict the outcome? What can we know about an individual person as we look at him, as we test him, as we measure him in all sorts of ways that will give us a basis for looking ahead? These are the predictors, or, in research language, what we call the "independent variables," the casual factors; which bear some relationship to outcomes.

As we look at the possible things that we might use as predictive measures, again they seem to fall into a number of categories.

1. Background history. This involves many things relating to the individual. We always take a case history of the client. We want to know when and where he was born, the characteristics of his ethnic background, his medical history, his educational history; our search broadens out over a great many subcategories. The background history factors are, in a way, settled. These are the things that happened to this person in the course of his life, but they are not always easy to discover.

2. Intellectual competence factors. This is the way in which the individual functions intellectually, positively. Whatever intelligence means, we want to find out what or how the individual measures in this area. Intelligence itself is not a simple thing. It has many phases and aspects and we want to get a broad picture of the intellectual functions of the person. The I.Q. is probably the easiest but most misleading and least useful way to describe the person's intelligence as an adult.

3. Physical and physiological factors. This involves questions of physique, the bodily structure, the nature and functioning of the various organs and systems of the body, the physiological mechanisms by which the bodily processes go on. It is important to know, for example, if the individual has a higher low metabolic rate, vital capacity, endocrine balance. Theses things, many of them, can be important determiners of outcomes.

4. Perceptual-motor factors. These are sometimes mixed with the intellectual competence factors, but are basically separable. They constitute the ways in which an individual can use his sensory equipment, and the integrated functioning in which he responds motorically, in gross-motor fine-motor, language or speech funcions.

5. Social behavior factors. These measure the individual in the relationships he has to other people, using all the

evidence which is available to us for this kind of behavior. Personality factors can be explored at any one time in order to predict personality structures and consequent behavior at a later time. We can explore the present work habits and learned skills, that is, the behavior patterns which he now employs in working situations.

These are general categories, then, within which we might try to acquire evidence which would enable us to make predictive evaluations. These are the kinds of things which we explore at various stages along the way in dealing with a problem of rehabilitation. The problem, then, which confronts the researcher in exploring these things is expressed goes out in a question which I put to you counselors: just how good is the evidence that you can collect for the things that you really want to know? There is not a rehabilitation center in the country that does not use some kinds of procedures of this sort. You have batteries of tests. You have an intake in history. You have physical examinations. You do all these things routinely. The question is, what good is all this doing? What does it enable you to predict with respect to the life course of the individual person?

Let me make some comments here on the nature of the research process as against the practical work which you people are doing. Research in its best form is highly controlled and technical. It tries to get at underlying relationships. In doing this, it has to detach itself from the actual working situation in which people have practical concerns. However, as the researcher does his work, his findings have to be translated into practical forms in which they can be put to use. Often, however, there is a discrepancy between what the researcher can say and what the practitioner can be sure of, because what comes out of the research process may be very highly refined; it may be isolated and detached from all things that are going on in the work-a-day world. This is true in any science. Galileo, for example, established the laws for falling bodies whereby certain predictions could be made how bodies would fall in a perfect vacuum, but then if you try dropping things through the air they do not work that way because of the intervening effects of the atmosphere. Similarly, many of the results of our research may seem a little remote from the things that you are doing, or you may optimistically take some of these findings and expect them to work out neatly in everyday applications. It may not be true. For example, suppose we find that there is a predictive relationship between, let's say, the amount of parental pressure put on a youngster and his aspiration level as he gets into a training situation. This might mean simply that if we take a large population of people and measure them in terms of the amount of parental pressure that is being applied, and then we measure these same people again on another occasion in terms of their motivational structure we might find a connection that is statistically better than chance. This may hold, however, only when we are looking at a whole population in which there is a certain trend or tendency for outcome to pile up on one side corresponding to information that we have gotten on the other side. But you cannot assume that every client that comes your way who was subjected to parental pressures is going to show this particular outcome because you do not have under control all the other variables that might make a difference. You do not know whether the individual case is going to fall within the generalization we have made about the population.

What I propose to do now is to review briefly a selective sample of some recent research. Let me give you five sample projects that have been undertaken in the area of the predictive evaluation of the mentally retarded for adult adjustment. These will represent quite a variety of projects because I want to illustrate some specific points.

The first one was undertaken by Joseph Parnicky at the Johnstone Training School in Bordentown, New Jersey. This is a facility for mentally retarded adolescent and the young adult males. The particular project undertook to see how well we can predict the clients progress through the various phases of training and into the final phase of employment from testing at intake.

There were five phases in the evaluation and training procedure. The first phase is that of prevocational evaluation which takes a period of eight weeks. They use a number of techniques. One consists in a unit evaluation on 40 sample tasks or work samples which are drawn from typical operations and standardized. Another is a field evaluation, as they call it, where the person works in different occupational work areas in the institution and is evaluated for performance by the supervisors. A third kind of evaluation is the psychological test battery which includes motor tests, personality and temperament tests, and intelligence tests of a standard variety. They have, there, three kinds of information: work sample information, on the job information, and psychological test information. The question then was, how much can we predict from this initial information and what will follow in succeeding phases. Phase two which followed after eight weeks involved half-time training in work areas and half-time in academic types of training. In working half-time in the work areas, the student was rotated through a variety of such areas. In phase three the more academic type of training was now terminated and the students were full-time in the work training areas. In phase four, while they continue to reside in the school, the trainees were employed in the community in various job settings. At phase five, they left the institution to reside in the community where they were also employed. This represented the final phase of separation from the institutional setting, but they were followed up to learn what would happen.

The outcome in general was this: the researchers found that the predictions were best when they were directed toward the second phase. That is, the intake phase, the prevocational evaluation, which enabled them to predict fairly well how these youngsters would do in the next phase, where they were half-time in the training areas. But as one looked farther ahead to the succeeding phases it was found that the predictive value of the intake information diminished. At phase four, they found practically zero correlation between the intake testing and performance where employed in the community but residing in school, and this lack of correlation continued into phase five. This, I think, points out one very signigicant thing. We can have much more confidence in our testing procedures and our evaluative procedures when we are looking for a next step than when we are looking several steps ahead. This reinforces the principle that you have to keep re-evaluating from one stage to the next. You cannot take the initial information and expect it to remain equally valid all down the line. They did find, in this particular setting, that the field evaluation information was of more value than either the unit evaluation or the psychological test battery. They found that in the psychological test battery the motor tests were the best predictors but here the criteria happened to be essentially motor tasks. It appears that motor tests predict eventual motor tasks perhaps better than other tests will predict other sorts of tasks.

Another example was a project by Taylor at the Goodwill Industries Workshops in Tacoma, Washington, with an intake battery of fourty-five tests, twenty-eight of which are standard measures, commonly used, and seventeen which they devised themselves. The devised tests simulated the kinds of work operations which existed in the Goodwill Industries Workshop. There was a two-month rotation of jobs in the workshop and the clients were rated on each rotation by supervisors on seven scales constituting a work-evaluation scale. The question concerned to the relationship between the initial tests and the on-the-job evaluation made by supervisors. They found that less than half the tests were relevant to work performance, and most of these were of dubious predictive value. That is, one could show statistically certain relationships; but in trying to apply them predictively to the individual case the probability of making a wrong guess is very high. They did find a number of predictors which were fairly good. These included the digit-symbol test in the WAIS-Weschler Adult Intelligence Scales, the Bender Gestalt Test, the Purdue Pegboard Assembly Test, and one of their own devising, a "wrap and pack" test. These were the most predictive. But, I particularly want to note is that these were predictive for within-shop work, and no claim can be made as to their predictive effectiveness in outside employment. The results were not tested outside this particular shop, and what has been found to work in one setting might not necessarily hold up in another setting. In effect, every shop has to test out procedures for itself to determine that they really work for them as they have worked for somebody else. Taylor found also that personality variables that were applied were non-relevant and did not give good predictive information of the kind that they wanted. Long run work efficiency was not measured. Again, this is a warning as to the limits to which one may legitimately generalize from a particular set of conditions.

A third project was undertaken under the auspices of the Connecticut Association for Retarded Children by Warren Bower. This used on a fairly large sample of 572 adult subjects, mildly retarded, drawn from community and institutions, and both males and females. This is typical of the survey type of investigation where one goes out with a dragnet and finds a population that meets certain requirements. The population is then studied in terms of relationships of certain other variables. Bower set up four criterion varibles, that is, measures of adult success. Job success was defined as a minimum of one year steady employment in a non-sheltered situation. A second criterion was that of a job level which distinguished those who were judged successful at holding a job at a simple level from holding a job at a complex level as indicated by the Dictionary of Occupational Titles. The thrid criterion measure, Bower called, was "social adjustment," but it might better be termed "practical intelligence," since it consisted of the Vineland Social Maturity Score minus the Stanford-Binet Score. It seemed to me not particularly useful as a criterion of social adjustment. His fourth criterion was that of community adjustment which was based on court records. The well adjusted person here is simply defined as one that has not gotten into trouble. This is a useful kind of information, but rather narrow as a definition of community adjustment. In general, the job success and the job level which really can be combined into one scale were the most meaningful of Bower's criteria.

Bower employed twenty-one different measures from a number of standard tests, the Stanford-Binet, the Vineland, Raven-Matrices, the California Achievement Test, Porteus-Maze, and included the Rorschach. One of the main reasons I am referring to this study is that it does utilize the Rorschach which is not usually regarded with the mentally retarded. In his analysis Bower found that out of twenty-one measures, fifteen yielded weighted values for job success and this included some of the Rorschach measures. Four of his predictors had valid weights for job level and six each for social adjustment and community adjustment. One thing I am particularly concerned to point out that a combination of test scores could yield a composite equation that would be fairly predictive for job success, where no one measure taken alone would be. But let me point out also, a serious limitation in studies like that of Bower. Prediction has here a very special and limited meaning. It does not really mean predictive he only showed that there was a tendency for individuals with certain composity test scores to be found among the successful group. The comparison of test and other data behavior groups whose success failure has already been established does not furnish a reliable guide for preselecting those who in the future will succeed or fail.

The study by Stephens is a complex one but I want to speak only of one feature of it. Stephens started with 141 criterion variables which she assembled by factor analysis, into 17 primary varieties of adjustment success in retarded adults. She discovered, for example, that it is one thing to talk about the "effectiveness of the employee" from the standpoint of the employer and his judgments of the employee, and quite another thing to talk about "responsible work orientation" which may involve quite different characteristics and factors. It is the distinction perhaps between "having good steady work" as over against being judged by the employer as a "good steady worker," and the two do not necessarily go together. A third success factor is autotomy," that is the ability of the individual to be independent in his general social transactions. That category may also be quite distinguishable in terms of personal characteristics from being a good worker and having good steady work. Yet, another syndrome or factor is "task orientation" as Stephens called it. This is a factor in which success on the job, is combined with negative social attributes. It is the case of the person withdrawn into his work where work becomes the only thing with which he is concerned. It is a defense against having to cope with the world in general. Stephens' research points out the importance, you see, of defining our criteria and determining precisely what kind of success and failure we may be talking about.

Finally, let me refer to Evelyn Deno and her work in Minneapolis, for a purpose which I think is quite relevant here. This is a follow-up study on several hundred dropouts from the Minneapolis Special Education Program to determine their characteristics and what has happened to them. One thing that she found is that among these dropouts is less than half of the subjects have been referred to vocational rehabilitation agencies. The majority of those that had been referred had already been closed or rejected from the services at the time of follow-up. Of those that had been closed, rehabilitated, seventy-nine percent were in satisfactory employment categories. Of those that had been rejected for service, fifty-six percent were making satisfactory adjustments.

Another aspect of Deno's study had to do with the nature of predictive variables. She and her group established three orders of predictive variables which they attempted to validate. The first order consists of conventional kinds of data-age, sex, verbal and non-verbal I. Q.'s, reports on following instructions and estimated measures of academic achievement. All these are the kinds of information that we commonly put into the record. The second order was based on these and other data in the case so that a construct was formed about each student. These constructs were of a higher order than the foregoing data and included professional judgment as to native intellectual level, functional intellectual level, attitude, influence of sub-culture, influence of family, etc. These constructs are frank but defensible opinions of how the student could be described. It is a more general order than the detailed test information. Then the third order, which they refer to as super-constructs, are estimates of the student's potential, i.e. potential for academic benefit, potential for social development, and eventual employability potential. This is an overall sort of judgment using the lower orders but going beyond them in terms of general subjective prediction. Deno found that the higher order, the higher the predictive value. We can have a very low order of predictive confidence in test scores and these individual items of data taken singly summation. We can have more confidence in the more general judgments made with knowledge of the test scores, but also with contact and other kinds of interaction with the individual. We can have most confidence in those higher level predictions. What this does, I think, is to reaffirm that we do not have to wait for a nice recipe book of test procedures in order to make good judgments about clients. We can use a clinical judgment, if you like, which is more qualitative than quantitative, which co-ordinates and puts together the objective information and general opinions estimate as to the probability of success. So it may give you some comfort, then, to know that you can trust your own judgment without going into all the labor and hazards of getting thousands of test scores. Not that these are without value, but alone they do not give us proof of future outcome.

QUESTIONS AND ANSWERS

DR. RABENSTEIN: Dr. Cobb has consented to allow you to ask some questions. I think he has provoked a number of questions, at least in my mind, and possibly in your mind also. I think instead of trying to run the film now, we will schedule it later and we will just give this period over to questions and answers. So if you have any questions, may we have them at this time.

MR. BREGMAN: Regarding the Parnicky study, what was the predict value between various phases three and four - how well did three predict the outcome of four?

DR. COBB: They didn't explore this too much in detail. They got some indications that from phase to phase the predictive value was better than jumping over phases. Their main work was concerned with the diminishing usefulness from the initial phase.

MR. BREGMAN: Would you say that from two to three was the highest just in a general statement?

DR. COBB: From one to two. They measured in each phase the beginning and the end of the phase. In fact, they found that the best information was from the field judgments of phase one to the final judgments in phase two. This was about the best finding.

QUESTION: Please comment on research that would be most fruitful.

DR. COBB: I think that the research that really needs to be done is to start with a very well defined, adequate size sampling of youngsters in their mid-teens at least, where they are still in school settings, before they actually come into the vocational setting at all. They should be selected as individuals who are by some kind of criterion probably going to require eventual assistance in making adult adjustments. There should also be a very good control group. Then, on the basis of instruments and measures that have been used, initiate a study in which we can validate the applicability of measures for a later prediction. We should carry such a group through to the point where we can really make a determination of the historical predictive value of these measures. We need good cross-validational techniques to enable us to see that the things that we are talking about are really relevant to the outcomes that we are interested in. Most of the studies that have been reported have been in either a very limited situation like a particular shop or a particular institution or they have been much too inclusive in scooping up a heterogeneous population. I think the kind of study that is needed is one where you have a large enough sample carried over a long enough time with careful enough control over the variables so that validated prediction equations can be established.

DR. E. MATCH: Back in the beginning you had touched on the self interest in the predictive period of vocational adjustment. Taking this into the M/R field and some of the things which have happened in terms of the client involvement in evaluation, what level of M/R's are you referring to?

DR. COBB: The history of work in this area is one starting with those who are nearest normal and then rather slowly moving to those who have greater severity and defects.

DR. MATCH: Would you feel fifty is the cutoff point?

DR. COBB: I do not like cutoff points particularly when you are talking in the context of adult adjustment. I.Q. measures are probably the least relevant; they are only broadly relevant. In general, you can say that as you go down the I.Q. scale there are certain changes in general expectancy. But virtually every study that has used the I.Q. as the variable in relation to adult adjustment, has shown it to have very little predictive value. Coming back to the question of self-image, this has been a particular area of interest of mine and there is, I think, very strong evidence that some aspects of self-referent behavior are appropriate almost as far down as you want to go. What has happened in the past is that so many retarded, particularly of the moderate to severly unpaired have been given very little opportunity to develop any sense of identity or aspiration levels. The development of an adequate picture, or sense of self-esteem is extremely difficult under the conditions in which most of the retarded have traditionally lived.

DR. MATCH: Sir, are you describing a work adjustment program? Should we program and train for acceptable middle class social responses?

DR. COBB: No, this of course is an extremely difficult thing to handle. But again we have to see the appropriateness of any of these criteria in terms of social and cultural settings in which people are going to function.

DR. MATCH: Going back to the second part of the question, what about the client involved who is mentally retarded?

DR. COBB: You mean by client involvement?

DR. MATCH: In the decision making process.

DR. COBB: I think a degree of this is possible, even with fairly defective persons--in terms of things they like and don't like, things that they prefer not to do, the kinds of settings they find congenial and non-congenial. The ability to make independent judgments, of course, is much more limited. I think that we have to go pretty far down to a point where determinations can be made fully from the God-like position of the counselor. We're still dealing with people. As long as you have the person, you have somebody that is respondent.

DR. MATCH: One other thing. Is there a difference in the performance of males and females?

DR. COBB: Yes, there are. I would not want to spell them out. But I think the evidence does point quite thoroughly to important sex differences in behavior.

AUDIENCE: Are these significant enough that we should be thinking of doing different or separate things?

DR. COBB: I think so. I think that this should always be a question in your minds, so that you don't wed yourself to a single pattern. I think that the evidence is going to show some important differences here, but perhaps not in all the areas we might think that they would.

AUDIENCE: Are there any data or studies of M/R's who were lucky enough not to get into special education?

DR. COBB: Yes, a rather interesting follow-up study by Ballard and Charles in which they had a population from two sources -- one from those judged to be mentally deficient in public schools back in the early 30's, and then a control group not so judged but in some other respects comparable. These were followed up until fairly recently; the final reports are now in, and one very striking finding from this was the upward change in intellectual status -- I should say the change in rated intellectual status -- over a period of years. This was taken by Charles to indicate a real constitutional change in intelligence. One can account for this in terms of the social contexts from which these children mainly came, and the change in social contexts in which they later found themselves. Or one can interpret in as Ballard intended to do, as reflective innefficient measurements in the early stages. But this gets us into the situational factors which affect even the nature and meaning of test scores.

AUDIENCE: Back to one of the statistics that you mentioned in line with the BVR's turning down M/R's who were after successful, should we jump on the bandwagons with what they are doing with keeping retardates in school until twenty-two to twenty-five years of age?

DR. COBB: I would certainly combat the old notion now that because the individual has a lower capability, therefore he doesn't need as long a schooling. There may be some things said to the contrary that because he has a more limited resources, he may need longer formal schooling in order to make the most of it. I would not want to make that as an arbitrary generalization because I think it depends a great deal on the kind of educational setting you have these younsgters in the same classroom or the same setting for all those years.

AUDIENCE: Tolstoi has advocated and come up with a work study, work-adjustment vocational program in educational functions.

DR. COBB: Right. Certainly I think that one thing that is indicated is a much closer tie between the vocational process and the educational process so that the Rehabilitation agency reaches down into the schools and picks up these people at younger ages. The schools have to reach out into the vocational function of the community to co-ordinate their programs.

AUDIENCE: I would like to question whether the dissemination is research itself. Before I do this, without any comparison, I wonder how many of those among us have heard of this research or read it?

DR. COBB: Alright, how many have heard of these pieces of research that I have been referring to? Raise your hands, anybody who has heard of or read all of the studies that I have mentioned. A few? None?

AUDIENCE: Obviously most of us have not heard of this. Is this our fault? Or is it the fact that the dissemination of this information is just not readily available to regions in general? I

can tell you one thing though, one of the studies is very similar to the program we provide. We have never heard of this study and certainly I would like to take it back and somehow use it in our own, for our own particular purpose. How can we go about getting this information?
DR. COBB: Alright, I'll give you one source. One thing that we have been doing in my particular shop is putting together an annotated bibliography, "Predictive Assessment of the Adult Retarded for Social and Vocational Adjustment." While I know it is incomplete, we combed everything that we could possibly get hold of and arranged the materials into a number of different groups: "descriptive studies before 1945," "descriptive studies after 1945," "studies on personal variables," "studies on environmental variables;" "predictive studies," and "trends in training" - these have been put together in mimeographed form and a number of copies were sent into VRA as part of our project report. But this gets really to the core of your question. These reports, you see, are not themselves widely distributed because they are not published through the regular journal channels.
AUDIENCE: Can an agency contact VRA? They are very good about sending out materials.
DR. COBB: This is the general procedure. Except now VRA says that they cannot handle through their own offices all these reports. I have several cartons of the bibliographies in my office waiting for people to write to me saying that they want them.
AUDIENCE: Who is the general agency there?
DR. COBB: For this one, the Department of Psychology, University of South Dakota, Vermillion, S. Dakota. This is "The Predictive Assessment of the Adult Retarded for Social and Vocational Adjustment, Part I, Annotated Bibliography." I will leave this copy here so that if anyone wants to refer to it, they can.
AUDIENCE: Then we may contact the originating agency for copies of project reports?
DR. COBB: I am sure this is true for almost all of these studies, you write the originating agency, they can probably supply them.
AUDIENCE: Were most of these studies based on the mentally retarded population?
DR. COBB: Yes, they are all on the retarded.
KARL EGERMAN: May I ask one question in regard to information and dissemination? It is a serious problem. One of the purposes of a seminar is to exchange information; we cannot spend all our time with journals. So this is one way we hope as a Research & Training Center to get some information desseminated. Thank you very much for coming.

"WORK EVALUATION IN A COMMUNITY EVALUATION CENTER"

John Campbell

Associate Director of the Rehabilitation Center
For the Vocational Guidance and Rehabilitation Center
Cleveland, Ohio

Since early in the 1900's, professionals have been evaluating and attempting to assess a variety of factors existing in persons and from this assessment we have tried to predict later behavior. The present "work evaluation movement" began as early as - or as recently as 30 years ago.

Historically man has always attempted to assess and evaluate other men and women. In primitive tribes, a variety of indicators were used to determine whether a person might be a warrior, or a successful hunter, or a priest in the temple. Back in Bible days priests were dedicated, or these were other signs that people observed which they thought might indicate other career potential. In the early days, man believed that future occupations could be determined or were determined by exterior forces, such as the stars, or the phases of the moon, or the winds, or maybe even charms hung around ones neck. Later we believed that man was not affected by nature and exterior forces and thought that they had no control over man's behavior. Now, we know at least, that the temperature, sun, the barometric pressure, and weather will affect our behavior. Later, man began to observe that others were endowed with certain talents which if they could discover what they were, might point to a particular career.

It was then gradually realized that man's destiny no longer depended on exterior forces, but on these talents or endowments. There were early efforts to measure these differences. A sample of this early effort was the study of phrenology and measuring the bumps on one's head. This was one way they assessed talent. At one time of our history, certain areas of the brain were believed to be better developed than others and certain talents were located in those areas. Charts existed of a man's head where the artistic, musical, and mechanical talents were located. All one had to do, was study and measure the person's head and find where the bumps were. If you knew what was under that bump, you would know what talent he had. In Cleveland, about 15 years ago in the Yellow Pages, under the Vocational Guidance Agencies, was listed an agency which used phrenology as one of their techniques. This caused great furor, of course, among vocational guidance people, so we at least got them out of the Yellow Pages. This was an idea that was used at one time and was a part of early psychology and attempts in philosophy to help us understand each other.

The science of physiogomy was another where the shape of the body was an important indicator. At Western Reserve University, we have scientists studying the man's body frame. They say that they can predict whether a person is more apt to have a heart difficulty, or might be more athletic than others, etc. They do some of this work at the Work Classification Center of the Cleveland Area Heart Society. They are using man's appearance as part of their study in evaluating heart cases.

You will remember that our forebears believed that long hands and tapered fingers were likely to indicate an artistic or musical ability. Even today, we don't take stubby fingered people who can't reach an octave and try to make piano players from them.

Men began, in the early 1700's, to become concerned with man's thinking process, and that is when the beginning of our prediction of individual achievements began. People assess each other all of the time wothout recourse to any scientific methods, "girl-watching" falls into this catagory. Men have always sized up each other and probably always will without worrying very much about validity and reliability. But professionally speaking, this observation has been of a scientific nature for about 200 years.

In our special field, scientific observation has been used for perhaps 30 or 40 years at the most. Professionally evaluation is fascinating and challenging because our subjects are very interesting people. But we play by certain rules which are designed to make our observations more objective and useful.

It is natural that work evaluation holds so much fascination. What can really be more challenging or puzzling than a gifted individual or a client for whom we seek to discover in all the maze of his behavior, a key to unlock his closed personality? What can really place more challenge on our banks of experience than the limited person for whom we are seeking an occupational hope and a way out of his unproductive existence?

[1]Walter S. Neff in the March 1966, issue of the Personnel and Guidance Journal has an article which describes the different approaches which I am going to discuss The approach that we use in Cleveland is one that comes under the discussion in his article. He lists several kinds of work evaluation and tells how they developed.

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[1] Dr. Neff is a Professor of Psychology in the Graduate School, New York University

First of all, he talks about the "mental testing approach." This morning in our first lecture we heard that the mental testing approach is used as a part of the evaluation of clients at Johnstown. Other approaches were, "job analysis approach," "the work sample approach," and finally the "situational assessment approach."

Neff states that the mental testing approach found its beginning in about 1900 in the work of Binet and Spearman. What began as an effort to measure almost every conceivable kind of achievement or ability and even man's ability to work. Mental testing received it's strongest impetus in World War I. Psychologists were attempted to screen individuals who were drafted and at least in early days of testing tried to select the readers from the non-readers, because they were finding that their usual methods of selection, weren't working. They were getting large "dropouts" from their training programs. The army often selected people by lining them all up and then counting off. The 1's become cooks, and the 2' radio operators, and the 3's infantry men, and so on. Well, this was alright in the old days but at the time of World War 1, our first airplanes were beginning to be used, there were trucks, early tanks, and we had a little simple radio set and and a wireless telegraph, so it was becoming necessary to train people in these things. We were drafting men from all over the USA and many people did not have much education.

This means something to me because my dad had an experience with this kind of selection during the first World War. He grew up in a little town in central Ohio and dropped out of school sometime in grade school and became an employee of the local livery stable. The livery stable was a place where you got your harness, buggy, and wagons fixed. The steel was put back on the wheels and there was a blacksmith's shop associated with this. If you have never seen one of these, you've seen it pictured in the Western movies, I'm sure. When automobiles first came into this community, it was natural that they take them to the livery stable, there wasn't any other place. You were licky to get gas for your car without worrying about whether anybody could fix it. So there were four automobiles that came into this little country community, probably a number of years after they were in other communities, and so dad learned to fix automobiles, at least up to a point. One day a farmer, who was a new owner of a car, was driving it into the barn and forgot how to stop it and he yelled "Whoa" to the car but it continued on through the barn until it landed in what you know is out behind most barns. So he promptly gave up his driving career and sold the car to dad who became one of the first young people in that community to own an automobile. In typical fashion he was drafted and the Army put him in radio operators' training, not in what he knew something about, although perhaps they didn't need any mechanics. Some of you who were eating Army food as late as the Korean War may wonder if they still aren't using the same kinds of techniques of selection. After World War II, psychologists were still designing ways to select Army cooks.

Now, the advantage to the mental testing approach in assessing people is that it is quick and easy to administer, it is inexpensive to use, and it is objective and reliable under optimum conditions. However, we found that psychological tests, even though they have good reliability sometimes don't have much predictive value. Sometimes we don't know much either about the content of the jobs that we are suggesting that some people perform.

One of the main problems (there was a question earlier about the General Aptitude Test Battery and whether it was used with everybody and what their experiences were) is that it is designed for specific populations who are able to produce in a quick, effective, organized, and efficient way. To do this, one has to be fairly secure and not be disturbed by inner or outer stimuli. One has to organize his thought effectively and put them down very quickly in a very specific way. Considering this, we can see why the psychometric approach is not one of the best ones nor is it appropriate for some of our work evalues who are immature or culturally deprived. Some have severe personality problems and the other problems which bar their accurate response.

All too often, back in the past we had to use only tests, and vocational counseling interviews to assess people. Half of our case load we had to write off because their profile on the test was low. We wished there were some better way to evaluate, but there wasn't any place to send people. Testing wasn't a satisfactory approach and it didn't meet all of the needs. We still use it today as a part of our total evaluation.

During this same period, Neff states, another approach developed. This was called the "job analysis approach." This wasn't centered in the university but in industry. "Job analysis" was developed in industry, and as the title implies it focused on the job to be done. It didn't emphasize the characteristics of the work, just the content of the job. Neff says that this calls attention to the job or its tasks was one of the main virtues of this approach. One of the criticisms of vocational counselors has been, is that we don't know much about actual work or the actual nature of work. We may be recommending jobs to counselors as evaluators which really aren't realistic. We have an academic understanding of this, but we don't really know what the job is. We have little preparation for knowing whether aptitudes actually fit certain job demands.

You remember the story "Cheaper by the Dozen" and Gilbreth who was the engineer who had his family programmed even down to the last moment.

No thought is given in this approach to the individual performing the work. In fact, the person is considered almost a part of the machine and maybe its weakest part. The efficiency of the worker was raised by cutting down all of his extraneous movements. They ignored the fact that a worker was really a social being and enjoyed being with other people. This method contributes to the evaluation scene, however, by helping us understand what is involved in tasks which we may be recommending to many of our clients. This job analysis approach has added an important contribution to the rehabilitation field, and that is that it has frequently stressed redesigning the machine or the job for the employee. The problem with the job analysis approach for the handicapped, is that all of the focus is on the job itself. Frequently, enough emphasis is not put upon the individual and this philosophy has not advanced too far in the rehabilitation field.

The next technique he mentions is the "work sample." The "work sample approach" to evaluation is one in which our agency in Cleveland has been particularly active. Neff points out that this is a post World War II phenomenon. This was an effort to put together the virtues of the psychometric test and the job analysis approach. From the psychometric testing approach, the work evaluator took over the ideas of standardization and statistical rigor. From the job analysis approach, the work samples were and effort to evaluate the client by observing him actually at work. Early apprentices were tested in this same way. One began an apprenticeship and if he did well for a period of time he could continue.

What is a work sample? It is a sample of work. On the VGRS evaluation floor we have set up the operation of a rocker-arm assembly, which would normally fit on the top of a Ford engine. The job is set up in our small work evaluation department much as it would be in the Ford engine plant where they make about three to four thousand engines a day. The client is asked to assemble 47 rocker-arm assemblies. Neff says that the work sample is a mock-up or a close simulation of the exact industrial operation, being very similar to the kind of work the employee might be expected to perform on the job. Neff states that the developer of a set of work samples must start, therefore, with a detailed job analysis of the kind of industrial operation that he wished to predict. Then he must take the job from the shop or the company into the laboratory, which is the work evaluation department. Then after standardizing it and developing the suitable criteria for speed and quality, assembling the tools necessary, then derive a method of making observation of the client's work behavior in production. Ideally, then, the work evaluation department must run a number of people through this; then get some kind of standards and norms. In some work evaluation departments, this is done.

But the main difficulty comes in doing a follow-up study to determine what the accuracy of the prediction has been, or to bring about other statistical treatments of what has been done to see whether it is really valid. Frequently, standarization and validation is neglected and work evaluators assume that their prediction has been correct. This is where the work sample approach comes under the most severe criticism. All of us run into this criticism. Particularly from researchers and our own research departments.

In the early days of the work sample approach, and in some areas today, much energy is spent in trying to develop what we have called in the past "actual work samples" or the exact replica of the job and the work process from industries within the specific communities. I heard our first speaker this morning talk about how impossible it would be to bring in actual work samples from all the communities from which these clients come. Of course, it would be! Of course, one can never exactly duplicate the job. If in Johnstown, you went down into your industrial area and you picked out exact jobs and put them in this setting, it still isn't the exact job. Again we can use on ourselves the same criticism that was used on the job analysis approach. Workers are a part of a working social family and the social experience, the heat, the noise, the motivation, and wages vary so considerably in our shops that there is little comparison between them and industry. We are really not measuring the actual job but it took us a long time to come to that realization.

We have ended up with a series of work like tasks. They are work samples, work tasks, or job samples. They are useful as long as we don't delude ourselves into thinking that they are actual work. If a number of assembly jobs exist in your community that might be suitable for your client, then you would perhaps want to go out and get a number of assembly tasks, but not, of course, duplicating every assembly job in the community. If a number of clerical positions are available in your community, then you would get into a number of clerical operations.

Another problem with trying to reproduce the actual job, we have learned, is that jobs, of course, are changing very rapidly. The climate of jobs in which we all live is changing very rapidly and we could never really keep up. The point I am trying to make is to get away from thinking about the actual job sample and think just about work sample.

Neff has asid that he questions whether in our work sample approach, if we are predicting actual job performance or predicting the client's ability to learn something in a training situation? Our answer to this is that we are not predicting actual job performance but predict whether we think he is employable, whether he is trainable, whether he shows he shows he is sheltered or diversional shop material or not employable at all. We think we can do this. We do predict his ability to learn something in answer to Neff's question - in a training course, in work adjustment, or in other skilled training, or classes in our community. We observe, for example, in doing work samples how he follows directions, how rapidly he learns, his concentration, his accuracy, craftsmanship, and so on.

The "TOWER system," as many of you know, was developed by the Institute of the Crippled and Disabled in New York City and was certainly one of the earliest and the finest efforts in the job sample technique. These attempted to replicate the exact work in the New York community and they tried, for this, to predict trainability and employability in these jobs in the community. The "TOWER system," and some of the criticism that we have had for the "general work sample approach" have also been applicable to the "TOWER system" as we bring it away from its setting and try to put into our own community. The TOWER people rightly advise all to standardize these jobs on local populations and communities. Some of us have not learned to do this and have used the "TOWER system" to later find that it doesn't predict well. We use certain aspects of the "TOWER system" just as you do here at Johnstown.

In our experience, the strongest support for the work sample method is that it's about as close to the reality of work as we can get within the rehabilitation center, except for actually putting clients to work, in the center. But if we are in a hospital or the laboratory or the rehabilitation center, the work sample is just about as close as we are going to get. It gives the evaluator an unexcelled opportunity to observe production, behavior and work attitude, sometimes for a long period of time.

It was with interest this morning that I listened to the plan to collapse the evaluation into a short two or three day effort. We tried this by pressing, working and structuring evaluators. We were able to get our work evaluation down to nine days. We started out originally with an eight week's evaluation and then this time diminished to six weeks, four weeks, two weeks, and eventually down to nine days. Since that time, we have become unsatisfied with the short evaluation and have expanded again. Now we have a much longer period of time for client work evaluation. Clients need a week to get settled in and to relax to show that they really can produce. No attempt is made to evaluate until they can be part of the scenery and part of the group. This brings out the point that the job sample approach allows the client to dissapate a lot of his anxiety and concern so that he can perform his work more suitably and give a better account of himself. One of the prime faults of the mental testing approach was that it was a "one-shot" assessment. With the job sample approach, you can give job samples a number of times to watch the change in the person's behavior which is one of the significant things for which we are watching. The work sample approach allows for several trials under controlled conditions where the client can be observed of settings. The client is in the department for extended periods of time and this allows him to develop a rapport or relationship with the evaluators so he can produce with help and support somewhat near the level of his actual potential. We can observe, too, his speed, rate or learning, accuracy, craftsmanship, and relationships, and so on.

Neff criticizes the reliability and validity of the work sample approach and cites one of the major problems as the obsolence of the work task. We know they become obsolete and that they are very difficult to validate. The criticism is a just one, but this doesn't mean that we throw them out. We have done a recent study of 207 cases where our evaluators predicted, on the basis of the "total experience" not just the individual work sample, the outcome of this person in the employment market. Interestingly, they were accurate in predicting employability 74% of the time. We use the total experience, the conference, etc to predict whether he is employable, whether he has sheltered employment potential, and whether work adjustment training will be successful. That is one of our first efforts to study the global process in developing what we are doing. The validity score, is satisfactory when comparing it with some of our psychological tests.

The fourth and last approach is the "situational approach," as Neff calls it. It originated not much earlier than the middle 1950's. It is simialr to the work sample approach in that it attempts to duplicate actual work. I think my first contact with this was with Dr. William Gellman[1] of the Jewish Vocational Service in Chicago. We used to have much discussion about this back in the days when we had our VRA grant to develop a work sample approach. He had as part of his work adjustment prototype project a two week evaluation process. He evaluated clients in the work situation at the contract work bench. His position was that we didn't need work samples. We were committed for five years to develop the work sample approach by the VRA. We knew that "actual work" was a good way to evaluate people but this development came later for us.

Neff alleges that the situational approach asks a prior set of questions, and I am saying that it does, but so does the work sample approach. He says that the situational approach asks, "Can the client work at all?" "Can he conform to customary work rules?" "Will he take supervision?" "Can he get along with other people?" "Is he flexible?" "Can he put in eight hours a day?" "Does he produce rapidly?" and so on. His contention is that the work sample approach emphasizes skill potential and the situational approach focuses on general work personality. I think this is an artificial distinction. Both focus on these. It may be true in his experience, but certainly it is not the situation as I see it. The work sample approach also asks the same questions.

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[1] Dr. Willaim Gellman is Executive Director of the Jewish Vocational Service.

Our work evaluation department was developed ten or twelve years ago, but now this in mid-1960's VGRS work evaluation is a combination of the work sample and the situational approaches. We have tried to put together the technique that have been found most useful from both approaches. Psychological tests have been added as well as medical evaluation.

The work sample approach itself is slanted in the direction of a general evaluation, as I see it now. The situational approach focuses more on the clients performance and study of him as a worker doing actual contract work. When we put these two things together, some of the problems of the work sample approach are eliminated. The work that the client does is real and there are deadlines and quality and production standards which are all real. He may see the work that he has done this morning go out on a truck this afternoon and realize for the first time that he has produced something worthwhile. On the other hand, all clients are not really ready to go into production situations and need much individual attention.

We use the work samples with a number of our clients before putting them on real production. Real production belongs to somebody and has real value. If you have a retarded young person and don't know whether he can cound twenty-five pieces in a bag, you better find out before you let him to do it for an hour. This is where the work sample comes in handy, in learning a great deal about the client and getting him settled into the situation before you turn him loose on real work. The situation always has to be an individualized. Another reason we added the situational to our work sample situation was that occassionally people did not do well on the work sample approach as in psychological testing. We were about to write them off and so fortuitously found he produced better on real work than we could have predicted. We learned that we should try real work with everybody. In some situations start him on real work first because the work sample approach can be threatening. In our early work evaluation department we maintained an air-conditioned, quiet, nicely painted, correctly arranged clinical atmosphere. It was not near the rest of the agency and the only time the client approached a real worker was if he made a mistake and turned in the wrong direction, or we happened to take him through the shop because we thought we might want to go to work adjustment. Later the work evaluation department moved near the end of the shop floor where the client could see the work ahead was noisy, dirty, and pressured. We did this wondering about the drop-out rate and found that it actually decreased. In fact, the drop-out rate among work evaluators has even improved because *they* were less isolated.

Neff indicated that one criticism of the situational approach is that usually the rehabilitator has a small variety of work which the client can do. For this reason, he can't duplicate in his little workshop all the other jobs that exist in the community. This is the same problem we have with the work sample approach. He can't duplicate the levels of skill which exist in the community. The professional evaluator's answer to this is that any kind of work is satisfactory so long as it gives the evaluator an opportunity to assess the client by observation. This is a weak argument, of course, but it still is an argument. I think the stronger point is the fact that most clients who are referred for evaluation service in a community vocationally oriented rehabilitation center, in our experiences, are virtually unemployable to begin with and come from a limited educational, cultural, and experiential background. Most of these clients by necessity will need to begin at the low level beginning classification of jobs. Very few of our people in the community centers have the skills and the potential that your clients have here. The work evaluation and the situational setting matches closely the duties and the tasks which will be required of him in his beginning job. In this sense it replicates the work to be done in a fairly accurate way. If you think back to your early first job, most of you, will realize that it required very little skill. One of my first jobs was sorting rotten potatoes from the good potatoes in the back room of an A & P store, and this didn't require any fancy evaluation or a great variety of tasks to know whether I could do this in the 93 degree heat. Most of us begin simply in the job market, unless we have advanced job training and education.

This final project report, now out of print, outlined how a person could begin a work evaluation department in his own agency. The report outlined the floor plan of the work evaluation department, the means by which job assignments were made and directions for timing and scoring task selection sheets, work evaluation interview forms, report forms, and so on. Guidance in writing reports and conducting conferences of the work evaluation type were also included.

The preliminary report concerned the "how-to-do-it-cookbook" material and the final report contained it in some validation studies which were disappointing. We did take a number of our job samples and compared them with performance on tasks and analyze them in the same way that the U.S. Employment Service studied workers traits in some of their 4,000 jobs. We tried to show how some of our tasks related to those traits so that if we could discover these traits in our people, we might be able to match them with the traits listed in the Worker-Traits Manual. We also followed up on 192 cases randomly selected out of 1,000 cases that we have studied in five years and followed them up to see what had happened to them to try to establish validity. We have found at this stage of development, that we must use the total experience to predict what is coming for the client.

Our young field of work evaluation faces the same problem that vocational counseling and psychotherapy faced some years ago. We are trying to move from an art to a reasonable facsimile of a science and I am not sure we are going to make it. It may always be an art; we don't know. Clients are being appraised in work evaluation departments through the country by rule-of-thumb methods; the value of which often depends upon the clinical competance and sometimes the scientific competance of the individual work evaluator. There is not a full-fledged standardized training program, at this point comparable to that offered clinically and psychologically by counselors, or vocational rehabilitation counselors in which accepted skills and competencies in training individuals are transmitted to students. In a short time the first graduate school for work evaluators will start at Stout State University in Menominie, Wisconsin.

Now we can only guess what kinds of individuals using what methods based on what theories are carrying on work evaluation. In such an unstructured situation we can expect performances in our work evaluation departments ranging from inspired intuitive judgment, through intellectually barren mechanistic rituals. As with other professions concerned with appraising human ability, increased professionalism will emerge and that is one of the reasons for our meeting here. We have the rudimentary application of scientific principles in the field and we have begun to organize a body of technical knowledge to which the evaluator may turn for orientation and assistance.

Someone asked here this morning about who should do work evaluation or who is doing it. Auburn University plans to train work evaluators in a number of shops around the country without benefit of degree. They found people doing evaluations who had not finished high school. A number of evaluators had a few courses in college and other had their college diplomas.

QUESTIONS AND ANSWERS

QUESTION: The Peter Pauhle study: Did he have a standardization sample?
ANSWER: He used the same approach. He had an industrial engineer study each motion and fragment of motion that was involved in the assembly task that he had. They totaled all these times to get what the industrial standard was for that particular job, even though that job might not exist in industry. An industrial engineer can tell us what the normal worker time requirement would be. What he did was to get the standard and compare his patient or client with that standard to see whether he made it and at what level of efficiency was he working.
QUESTION: But as I visualize our society today and probably more so in the future, it is not so much the physical movement that is going to be important. It is going to be more the application of education to work. I do not see that this is going to be too much of a benefit to study physical movement when education is a work factor.
ANSWER: Well, if you are saying by that that you think that the personality factors or the attitudinal factors or that the social factors of work are more important than the hardware, I would agree.
QUESTION: Personality and education both? I don't think we can measure this by wiring a person up and ....
ANSWER: No, he didn't attempt to. He attempted to measure personality factors in other parts of his experiment where he was testing the frustration and reaction, the heartbeat, the psychogalvanic skin response, and a lot of other things in relation to how he responded under stress and how quickly he would adjust to those things. For me, most of what we get in our evaluation, the more important part of it, is what we label "work attitude." We have two main categories: work performance (which we describe his performance in assembling, sorting, and clerical kinds of tasks) and behavior and work attitudes. These are two main parts to the report. We do not repeat all the medical and psychological information in the report.
QUESTION: I think that repetition is good if you put it into functional terms. I don't think you need to repeat everything from the medical report.
ANSWER: We would certainly have to consider the medical, psychological, school, and work reports, but the report doesn't need to include them. Another major problem is the work evaluator's ability to mobilize to write. It is a difficult thing to get people to commit themselves on paper. Evaluators will do it in conference; they will talk very freely about what they think about a plan and what they guess will turn out. But when they go back to their office with the dictaphone, it is awfully hard to get it out.
QUESTION: Did Pauhle's work try to find out what people with very severe limitations in their hands could do by analyzing the job and what was required.

ANSWER: I can't answer your question. I know that he was in a setting in which there was severely physically disabled people.
QUESTION: What was the conclusion regarding the effectiveness of this method for predicting future success?
ANSWER: Peter Pauhle, like all researchers, said that more needed to be done. He said that a whole new series of experiments could be carried out and that some of us should pick up on these.
QUESTION: Did he consider his experiment successful?
ANSWER: Yes. As a demonstration of research for another way to evaluate people. He was critical of our primitive methods. This was more scientific, exact and objective way to evaluate its believed.
QUESTION: Don't you think we rely too much on industrial samples? Why not service area samples?
ANSWER: We have evaluees assigned to the service department, maintenance department, and by that we mean cleaning, waxing and the like. We have them on the shipping dock. Some people may need this experience and we want to see how they can handle themselves. Sure, you can do this and you should make use of every facility and capacity you have in your center to evaluate people.

THE DESCRIPTION OF A SHELTERED WORKSHOP IN VERMONT WHICH PERFORMS UNUSUAL AND PROGRESSIVE CONTRACT SERVICES

Richard Hill

Acting Director, The Vermont Rehabilitation Division

When Karl Egerman first called me to talk to you about our shop, and particularly after he told me the topic of the seminar, "Some Recent Advances in Research in Vocational Evaluation," I thought to myself "he really cannot be serious." But, I guess, it can be true, because this operation which I am about to describe, I suppose, had as little advance research as any project which I know of. We have not attempted any research since we are really not sure how much of an advance it is. Primarily, this facility is what we consider to be an efficient contract shop, an efficiently operated business operation where evaluation is limited to very narrow, specific goals. I think the one thing it probably does do fairly well is to compromise the classic shop conflict between production in a contract shop and the evaluation process that is going on there. Those of you who may have had anything to do with sheltered workshops where industrial subcontracts are carried on know of this conflict. Either your demands for production are so great that you cannot do an adequate job of evaluation or, if you concentrate on evaluation, your contract commitments are not met. I think we have done this fairly well.

The shop actually came about back in June of 1964. The State of Vermont at that time was operating a demonstration project in the city of Winooski, a small milltown, with a very large woolen mill operation. There had developed traditional patterns of low income groups in the town, patterns of welfare dependency, and when the mills suddenly shut down in 1952, it left the town devastated. A very high number of welfare cases developed out of this situation. The Rehabilitation Division had a very tough time getting these people back to work so a selected demonstration project was started to deal with the situation. Now one of the problems of working with these people was that at any point in the rehabilitation process the counselor had very limited knowledge, or no knowledge at all, of the potentials of the people he was working with. He knew that they had developed some very undesirable dependency patterns; they, by and large, had low motivation or no motivation at all; and so far as the counselor was concerned, they were complete unknowns for placement. The project director mentioned to me one day, "if we only had a shop where we could expose these people to a work situation, we would know at least this much about them: can they operate in a paid work setting and how do they operate? How do they interact with people in the shop"? They had at the end of their second project year some extra funds left over, enough to rent a building and that is about all. Technically, this is how the industrial workshop began.

Going back a little bit, at that particular moment of time, I was connected with the industrial homework office in Vermont which is a work program for the severely disabled, who are homebound either because of their disability or their geographical isolation or both. Over a period of ten years we had developed a rather workable program. We had a variety of sub-contract operations. We had some temporary personnel that we could detach from our program and loan to the shop. We had transportation facilities; we had a few trucks; we had an established payroll system and had a certain amount of knowhow. So with this in mind, we simply took what money they had for the purpose, we rented a building, we bought some work tables, and we took over a couple of industrial sub-contracts that were not particularly good for homework because they really required that you set them up on a production line basis. This cannot be done in a homework setting because each person must work in isolation. We brought these jobs into the shop and brought in four clients from the demonstration project and we were in business. So you can see what kind of planning went into this thing. The purpose of the shop at that time was simply to expose the client to an actual paid work experience and drew some very rudimentary conclusions from this, and at the same time hopefully build motivation for work. This was done at the same time as the welfare payments were being phased out. We hoped that we could interest them in the job that they were doing so the welfare payments could be dropped altogether. Our very first job was a machine stitching operation where we stitched little pieces of pre-cut cloth onto a cardboard header to be used as a pocket handkerchief. You have probably seen dry-cleaners use these as advertising gimmicks. We had four people at sewing machines, one doing folding, the other doing the machine stitching, and the other packing. This is where we started. All the work at that time was on piece rates. People earned exactly what they produced and our wage scale was very low; the shop average was about $15 a week. Some people earned as low as $10 some earning as high as $40 per week.

In January of 1965, we had what amounted to be a catastrophic change. We had been working with the International Business Machine Corporation for several years in our homework program doing some very low level salvage jobs. I approached them and asked them if they could not use our shop which was only a few miles from their manufacturing plant. They sent a survey team down, and in January of 1965, they gave us a job of salvaging transistors. This employed about 20-25 workers. I want you to see what kind of work these people have formed.[1]

This is the transistor that they worked on. You probably cannot see it because it is so small. I can show you some blown-up versions of the same component. This is the transistor I'm talking about. You can see the relative size of it. Some of these transistors have been manufactured by IBM, others have been purchased by them and they were mounted on a circuit board. The entire circuit board had either failed during their inspection process or else it had actually been installed in a data processing machine and later had failed. Rather than try to find the individual component that was damaged, they pull the whole circuit board out and strip the components from them. And there is the little transistor I just showed you. Now when those are put on the board those three little leads have to be clipped over backwards so that they can be soldered on the back. When we got them, by the millions incidentally, they were bent, after being pulled out of the circuit board and we had to straighten the leads and bring them up to a vertical position and then inspect for about fourteen different defects. This one here, for instance, has the edge around the can bent. This one with the tab on the side has a very small scratch on it. Incidentally, these all have to be worked on under an illuminated magnifier, obviously because they are so very small. This one has the lead bent as I described to you before. The component has to be thrown away if the lead is bent more than ten degrees in reference to the base. If less than ten degrees, it can be straightened with a pair of small pliers, and brought back into a vertical position. Some of these components have scratches on the side of the can. These are hardly visible to the human eye without magnification. The insulator which is made of glass and located on the bottom has to be inspected for cracks or for cracks around the insulator itself. The leads themselves may have scratches or dents on them that have to be inspected. The workers also look for scratches on the side of the can. On the top of this is a serial number -- a three digit serial number. These transistors, after they have been worked on, have to be sorted according to this serial or part number. The part number cannot be obscured. If you cannot read it then the component has to be thrown away. There are probably fifty different series of these things and all that have to be separated and returned by part number. Here is another picture of the serial number on the top of this thing. It is almost impossible to see without considerable magnification.

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[1] Mr. Hill demonstrated the transistor circuitboard to be explained.

This is the kind of job we got. This job allowed us for the very first time to establish a minimum wage in the shp of a $1.25 an hour and we have continued to do this ever since. The pay rate in the shop is based on productivity but is converted to an hourly wage and it goes no lower than a $1.25 an hour. After February 1 it will go to a $1.40 an hour. Traditionally it has gone to a maximum of $2 an hour and probably will go to about $2.20-$2.30 an hour in the future. What we are doing you see, is bringing people in on a job which they may or may not be suited for, it is just simply to expose them to this work situation and move them around the shop doing the various operations we have to offer them.

The next job that we got was one that involved an advance in solid state circuitry with IBM. Essentially it involved condensing this old circuit board to this miniture size. It is a little ceramic wafer, which has the transistors and resistors you see here - all printed on the ceramic wafer. These we had to hand load and then inspect visually for leads that were missing on the bottom of the ceramic chip and for the little solder tracings that might have broken or had not been correctly applied. This particular job required an additional 25 or 30 people. This raised total shop employment to some 50 workers.

In January of 1966 IBM came around again with another inspection operation which meant we had to hire an additional eight people. To make better use of the very expensive equipment which they loaned us, we had to go into a two-shift operation and use this equipment 16 hours a day instead of eight hours a day. So we now had a shift coming in to work nights. This brings us up almost to the present time where we have approximately 70-85 people working in this shop in any given payroll period. This latest job, incidentally, was, I think, one that Dr. Egerman was particularly interested in because the component was so small you could hardly see it at all. It was a little chip, actually an entire printed circuit, about the size of the end of a sharpened lead pencil. These were all glued, in the manufacturing process, to a disc about two inches in diameter. There were about 1,500 chips on each disc. In order to inspect them they had to be put under a hundred power binocular microscope so they could be picked off and inspected with ease. About 14 different inspection operations were performed on the component.

The complexity of the shop and the volume of business we had gotten into necessitated that we divorce the shop from our industrial homework office and set up its own administrative structure. The unique feature of the shop from a business standpoint is that our legislative emergency board, in its generosity and wisdom, told us that we could keep the shop going after initial grant funds were exhausted only if we could make it self-supporting. They would approve staff positions, but only if we could pay for these and all operating costs from our contract income. To date we have been able to do it, but you can see this imposes some severe limitations on what we are able to offer in the way of evaluation services. This led to our decision to limit our evaluation services to on-the-job evaluation only.

Now let me read to you the factors we take into consideration in the evaluation process and by the nature of these things, it involves the counselor at any given period of time. First of all, we ask our shop personnel to evaluate clients on their punctuality on the job and their abuse of break privileges. Do they follow instructions? Do they accept corrections from shop floor people? Do they concentrate on the job on which they are placed at a given time, and if the jobs performed provide a fair opportunity for observation, comment on the following things. You see, it may or may not be an operation that would yield any useful information on the following factors: Do they demonstrate time and motion economy? Do they have the ability to organize their work, if organization is called for in this type of work? Do they have foresight in anticipating problems that they are going to have? Do they show initiative on the job? Can they handle their tools? Can they plan their work in such a way that the work flows along smoothly? And, are they dependent on others in the shop, either shop personnel or co-workers who are working next to them? We asked shop personnel to make an evaluation of their production rate. Production rate here, the norm, would be what IBM itself has established as a production norm on this given job. Oddly enough, we have found that about 50 per cent of the clients in the shop, brought in without any knowledge or skill, and put on jobs that may or may not be a good job for them, have shown that they can produce anywhere from 50 to 100 per cent over the IBM norm established for this job. This would make an interesting research project for someone, but at present we cannot account for this. We asked shop personnel to evaluate them on the quality of the work they do and again, this is actually part of IBM's production process, so you can imagine the quality control is very, very stringent. They send quality control teams down at least twice a week to go over every operation in the shop to see how we are doing it and every single lot of work that is returned is subject to their very stringent quality control standards.

We asked shop personnel to evaluate them on their attitude toward the staff, on their relationship to fellow workers. And this is a real problem. Evaluation is just simply how they get along with them, how they relate with them, can they work with a certain group of people without getting in trouble. Then they manipulate the workers a little bit; move them into another group over a period of time to see how this works out. How is the client making use of this opportunity in the shop? Is it something he is doing simply because his counselor has asked him to do it? After he gets there, after he gets used to the pattern, is he beginning to take an interest in it and trying to do a good job? Should the client contimue? If so, how long should he continue? What limiting factors have become evident while he is there, either from the disability or from other causes? If the shop floor people are asked, they make a judgement concerning a client on a given job and whether his disability is affecting it or any other cause that can be affecting it. What observations from actual shop operations (and we underline actual shop operations), will be helpful to the counselor and client in selecting a goal for training or placement? You see we structured this question in such a way that we are trying to avoid personnel making any predictions about what this client can do. With such a rudimentary evaluation process it would be inappropriate for them to do any predicting. Wo what we are asking them to do is to observe them on an actual shop job and then on the basis of this, what information would be helpful to the counselor and the client in selecting a goal for training or placement. Then, if the client's stay at the shop is terminated, give the reasons and the present situation and then additional remarks.

One of the things we have been able to do at this shop by conducting a well run business and by careful, detailed and high quality work is to develop an excellent experience rating working with the International Business Machine Corporation. As IBM phases these operations out, because of the changing state of the art in electronic circuitry, and get into more complex jobs, the Industrial Workshop is always in a position to accept the newer, more complex operations that they are developing. IBM knows that in the past we have been doing a good job for them. This also has enabled us to ask and obtain better prices on our product. This has led to constant high-level maintenance of our contracts with them and has allowed us to employ almost as many people at any time as the counselors want to send to us. As a matter of fact, we have so much work at the present time that we cannot take care of it and we are establishing satellite operations of this shop in other sections of the state. We started one at the Waterbury State Hospital where mental patients are going through our rehabilitation program there. They are being exposed to this kind of on the job experience. The number of given people at any one time runs from 75 to 90. These people are earning about $15,000 a month. Our markups are more than sufficient to run the entire shop operation. Our total gross business is running about a quarter of a million dollars a year. This has been in just about a two-year period of time.

Now we have two directions that we can go in right now. We can either extend this same concept to satellite operations in other parts of the state or we can apply the earnings of the shop to develop what we have in more depth. We have not quite decided what to do. Our immediate impression is that we will try this concept in other areas of the state and this way not have to get into the very high costs of professional personnel in a sophisticated evaluation program. The staff are non-trained, the shop manager himself has business experience, absolutely no experience in rehabilitation and none whatsoever in evaluation. So he is evaluating these people about the same as an employer would on a typical factory benchwork job using this as a guide. But we are not asking him to evaluate factors that he is not qualified to evaluate.

All of our clients come from the Division of Vocational Rehabilitation or from the Blind Service Division. Now it does not seem on the face of it that any of these jobs could be done by the blind. This in a sense is true. There are some people from the Blind Service Division who have had surgery or have just had recent cataract surgery with recovering vision and could do a limited amount of work with these transistors after they have been inspected. For instance, each re-worked transistor has to be marked with a little green magic-marker to show that it is a reclaimed part. This is something a person with very little vision can do. All they have to do is pick it up and mark it across the top with the green marker. Vocational Rehabilitation sends people with all kinds of disabilities, orthopedic handicaps, respiratory illness, and cardiacs. We have a considerable number of mentally ill from our rehabilitation house program in Burlington, Montpelier. We are getting an increasing number of retarded who are sent to the shop simply to try them out in the work setting. They may or may not have had very highly developed rehabilitation services in the past, but they are sent for this purpose.

The reason we restrict intake to the Vocational Rehabilitation Agency is that the shop does not provide any supporting services itself. We want to make sure, first of all, that these people do have a qualifying disability and secondly, that the shop experience, no matter where it occurs in the rehab process, is part of the rehabilitation plan. So you see, the counselor then becomes an important part of the overall evaluation process. He knows what the shop has to offer. He knows the limitations of shop evaluators and he himself then becomes in a sense a part of the evaluation team. He does this by getting these periodic reports. They are sent to him monthly. He comes into the shop at intervals and sits down with the shop manager and shop floor people and with his skill and knowledge can determine whether or not his client is benefitting from the shop program. One of the big problems we have at the shop, and it may be a very undesirable secondary dependency traits. We have not had the success we hoped in moving these people out of the transitional employment of the shop into work experiences in the area. The counselors tend to get a client in the shop and because they are being paid a good wage, leave them and forget about them. They may not try to move them along for further evaluation or training, or actually into job placement. For some people it becomes very obvious after having worked with them for a long time that they will have to be closed in an extended shop setting. They well probably be permanent sheltered workshop employees. We are trying to hold this number down to a very small percentage. I think that is about all I have to offer and would welcome questions as a means of amplifying our program.

QUESTIONS AND ANSWERS

EGERMAN: The question that I am going to ask, is that I wondered, is a particular skill which these people have that I have not seen elsewhere in any of the workshops that I have previously visited, and that is the capacity to perform highly sophisticated monitoring? Perhaps some of you who have had some more specific experience in the work evaluation programs, could answer. Are you aware of tasks that require only monitoring behaviors? The reason I bring this up is that, of course, monitoring behavior is an entire field of psychological perception in itself. When I was with an industrial research company, one of our projects was to find out why certain people are making errors on the large atomic reactor where they might have caused what is called a "critical incident" which can be anything from not noticing that a hot water pipe had burst to one where the whole thing just goes up and there is no one left around to tell you what had happened. If you have never had an opportunity to visit one of these installations, there are about 70 dials and maybe about 20 meters and maybe about four records from an elaborate recorder that the monitor is expected to watch. What this job entails is just sitting there and periodically scanning all of these dials. It is very much like an airplane pilor. Once he gets the plane up in the air and sets it for automatic pilot, he just sits back and rests and relaxes. But really that is not the end of it because all of these dials have to monitored periodically and there are certain kinds of people apparently who are better monitors -- who are willing just to sit back and monitor; they do not have to act. This analogy, of course, is quite similar to people I have observed in your shop, where regardless of the severity of the physical disability, I am not sure I could say that with respect to the severity of the mental or emotional disability, but I seem to feel that there is a whold new avenue to a whold new approach to sequence of jobs to people who are in a workshop situation could undertake, and this is the quality control type of operation monitoring. When I saw this operation, a fellow was sitting at a binocular microscope and did nothing but let these little wafers pass underneath the microscope each time, hour after hour, after hour, and I guess you pointed out to me about 14 or 15 different kinds of things that he has to look for on each one of these little wafers for which he either accepts or rejects the wafer any single defect out of the 14. Have any of you had experience in this particular kind of work as it might be conducted in a workshop? As far as I know this is the only place in the world that does monitoring behavior so well.

HILL: It is too bad that we have not developed this shop more professionally, with more professionally trained people and that we have not done more research into what we have found out, because I am sure that we have found many interesting things about behavior of people that we are not aware of. We are simply aware of the fact that we can derive some benefit, the clients can derive some benefit by exposing them to a paid work experience. But there are many things that are going on at this shop that probably should be researched.

AUDIENCE: I am a little bit concerned, or are you concerned, about the fact that we seem to be confining your evaluation to persons who do this monitoring work and perhaps make decisions that they are not feasible for work or any work which obviously they might be doing. We have had other kinds of tasks used, closer tasks used.

HILL: Yes, one of our big problems has been too much success with what we are doing and with the available facility. Every week I talk to my shop manager to say we must get out and find some different operations to get in here so we will have a broader scope of work, different tasks on which we can evaluate people. But IBM keeps us so loaded with work, we simply cannot get away from them. This is a point well taken, but we do not do any predicting. We do not say that because the client cannot do this; he probably will not be able to do something else. All we are saying to the counselors is that he cannot do this particular job.

AUDIENCE: Do you depend only on IBM quality control or do you have your own?

HILL: No, we have to maintain our own. If we do not, they will.

AUDIENCE: How many of the workers are doing inspecting?

HILL: Well, probably about 60 to 65% of the shop are on some kind of inspection. With transistors, the same person that straightens the leads with the little pair of needle nose pliers, at the same time is inspecting the components that he is working on. Because he is working under an illuminated magnifying glass, he is looking for these things as he works on the transistor. This is a combination of manipulative skills and inspection at the same time.

AUDIENCE: What are your experiences with the mentally retarded regarding monitoring?

HILL: Not too good. We had one who was just moderately retarded that did do some inspection and did a fairly good job, but he could not discriminate at any given time. You could teach him to look for one defect and then for another defect and he could recognize each defect in isolation, but as he had to do this on a high-speed basis during the day, he simply was forgetting it.

AUDIENCE: How much practice did you give him to learn to monitor?

HILL: Oh, probably four or five days of concentrated work, enough so that we knew that with a lot of instruction he could recognize each single defect. He had no trouble at all. It was when he had to look at all 14 of them at the same time, he would see one and forget really what he was looking for because he had to look for so many. It was very obvious that this was not the thing for him to do. On the other hand, when he started working with transistors where had to just pick up the transistor and straighten the lead and all he had to look for was to see if the lead was bent too flat to straighten or if it had some knicks in the side of it, he could remember this. And he a very satisfactory job. Interestingly enough, IBM who had never employed the mentally retarded before were so impressed with this performance that they asked me to come up and survey their plant. We found at least a half dozen or a dozen stations in the IBM plant that would be very good for the mentally retarded and they have hired one on a pilot basis. Right now we are very anxious to see how he does.

AUDIENCE: Are you particularly interested in jobs for those people with limited or no use of their hands? Can't these jobs require no use of the hands?

HILL: We had one man, I think we have only had one. He had a prosthesis; just one hand and a prosthesis in a place of the other. He could do inspection, he could not do any manipulative jobs, but he could do inspection jobs.

AUDIENCE: The inspection jobs would not include any use of the hands at all?

HILL: No. He had a hook, and he just pushed the work through with it. This job is set up with a tray on one side and these sub-straights all lined up in the tray. He just simply had to push a whole line of substrates along, one at a time, underneath the scope and they went over to another tray. So he was able to do this without any difficulty.

AUDIENCE: Did he pull or mark the rejects?

HILL: No. The rejects were pulled out and simply thrown into a rejection basket.

AUDIENCE: He could do this with his other hand?

HILL: Yes.

AUDIENCE: Who pulls them out?

HILL: Well, the process can be stopped when he gets to the one that is bad. He can simply bring his hook up and push them back again and then push the reject of the end of the holding tray into the reject tray, with the use of his arem and good hand.

AUDIENCE: How about traumatic quads?

HILL: I do not think they could do this without any hand function.

AUDIENCE: What criterion did the Rehab office or counselors use to send people up to the workshop.

HILL: They send them at different points in the rehabilitation process. Sometimes they will send clients over even before rehab really begins. They may have already determined tentatively a vocational objective for others. While they are waiting to get the client into a training situation, they may send them over for a month or six weeks, simply to test ability to work in a work assignment. They may send them over after they have come out of training, between the time training is finished and they go out on the job simply to see how they perform as workers. The counselors know that they have learned a skill and they, the clients, have been trained for a specific skill, but they do not know how they work in an actual job.

AUDIENCE: What percentage have been kept on as permanent workers?

HILL: There has been a fairly small number of clients that have actually been closed on the job that we know will be there as terminal shop workers. I think this is only about 10 per cent of the total work force. But we do have a great many that are transistional and have been there a great deal longer than they should be.

AUDIENCE: Are there any specific characteristics that are recognized as being specific of this type of work? In other words, are the counselors developing any ideas of what person will do better in this type of work?

HILL: I do not think they have made this correlation, but I think generally speaking, they send them there simply to expose them to a paid work experience. They may even send a client to the shop that has shown in testing that he has very few skills for this type of work. They simply want to see how they can perform in a paid work experience. So it is used at anytime during the rehabilitation process, on a non-selective basis in regard to specific types of disability.

AUDIENCE: There is a more general question I would like to raise and you brought it up in your talk. You said that perhaps in your own facility you are creating a certain amount of dependency on your facilities. In your opinion, what might we do to make these people independent in the sense they are independent because they are there working and getting a salary, etc. But should we be examining out programs and what not to determine if there are some things that we can do to make them want to leave us and these shops and find employment? It is a very sweet deal, so why leave it? So, what can we do?

HILL: Well, I am not sure. At least in our case, in our state, probably one of the biggest problems a counselor has is simply finding job opportunities. This has been traditionally hard in Vermont because there are very limited selective placement opportunities in the state. Secondly, we have not had the co-operation from the employment service that we would have hoped for in this city. Here we have a shop with people who are doing fairly high level work. At the same time, in the city of Burlington, the employment service has many unfilled job orders for factory bench workers. We have invited them down to the shop to see what we are doing. We say, "here we have people who are not unknowns to you. You have specific requests for specific types of workers and here we have them in the shop. And while we have not conscientiously trained them for factory benchwork, here they are doing it, and doing a good job of it, in many cases, producing at rates from 50-100 per cent over established IBM norms." And yet we still have these people stuck at the shop and not moving out. There are some hopeful signs. I think IBM has hired quite a few of them. One of the things that may have happened is that this shop is, in a sense, IBM's conscience. This was a very good way not to hire the handicapped in their own facility. They could simply bring their work down here and let us do it.

AUDIENCE: They do not have to have any retirement plans or any kind of fringe benefits or insurance for these people either, that is true isn't it?

HILL: You mean of their own.

AUDIENCE: No, if they bring the work down to you.

HILL: Oh, no, that is very true. It is handled simply as a subcontract. Very true. I do not think that this has been the thing that has kept them from doing it. I think IBM has been very reluctant to hire the kind of people we have in the shop because their philosophy has always been that they want people who are adaptable, who have great potential for growth in the company. And they do not want to hire them simply as benchworkers and have them remain always as benchworkers.

AUDIENCE: Would you say that you could help hire the handicapped in industry developing this program more and more like the real world at work?

HILL: Well, it is now, except that we do not want to turn it into an extended employment shop if we can possibly help it. We want to have turnover so that we will be moving the people along in the rehabilitation process. Instead of having them get stuck here, they would move out into competitive employment. We recognize the fact that many of them won't be able to, but I resist the effort on the part of our counselors to turn this into a terminal sheltered workshop.

AUDIENCE: In recent months we have had the experience with several clients who are in one phase of the program where workshop and the whole staff felt that these were so multiply disabled that it looked like they were going to be in extended workshop employment for the rest of their lives. For some reason they got mad at us and left the shop and went out and got their own jobs.

HILL: How did you create this?

AUDIENCE: We are now in the process of trying to analyze why they got mad at us, to see how we can use it constructively. I do not know what the answer is. This happened and tells us something too.

HILL: Well, one good thing that has come out of this is the people, after they have been there three or four months, begin to establish a standard of living that is commensurate with their earnings at the shop, but then as they begin to look around, they see that outside employment opportunity will offer them higher wages. They begin to get restless. They feel that they will not be able to advance within our shop and go onto better things, so they do begin

HILL: Our services in Vermont are very limited. We send clients to out-of-state Rehab Centers. We do not have many facilities in our own state. We do have a medically oriented rehab center, but its services are limited largely to medical evaluation. In answer to your specific question, I think that we seek most rehab services elsewhere and use the shop largely to bring out what kind of a working person we have. It is also used to build motivation for work in those that seem to lack any clear cut vocational goals or actual interest in employment.

AUDIENCE: Do you have to make any therapeutic changes in the client other than perhaps the motivation of one person?

HILL: Yes! I know many cases; for instance, when we first started, we had such a shortage of workers that we were pulling in some of severity of their disabilities. They had worked in the homebound program and demonstrated capacity for work. Then we brought them down to the shop. They really took off from this point. One lady, I remember, had emphysema. She had never considered that she could leave the house. She just couldn't get out into the air. She has been at the shop not for almost two years and doing a very fine job. This is not so much planned therapeutic change as it is an accident of the actual work experience.

AUDIENCE: Are there any staff members of the workshop who are charged with the responsibility of placement activities?

HILL: No.

AUDIENCE: State employment service, our own VR counselors. We are toying with the idea of adding a placement person on our staff. Right now we are hoping that we can interest the employment service group in doing more placement for us, rather than hiring someone ourselves. Have them detach a person and do placement in our own shop.

AUDIENCE: It seems your program is tied to IBM.

HILL: Yes, it is. In the Burlington area we have several large companies. General Electric has a manufacturing facility that would hire the same type of person for factory benchwork. There are two or three other small industries that are looking for this type of person.

AUDIENCE: Yes.

HILL: You mean a mentally retarded person who is in the shop and decided because he can straighten leads on the transistors, thinks that he can become an electronic technician? I am not at all sure that we have run into the problem. So I really cannot answer your question. I suppose the counselor would have to discourage this kind of assumption of the part of the client. We have urged counselors to brief their clients very carefully before they come up to look around for themselves and begin to agitate for outside placement. This has happened.

AUDIENCE: What's your ratio of evaluators as such. This is shop production. We have a shop manager, we have two shop foremen. We have two assistant shop foremen, and we have one clerical person. This is a staff of six people who handle the total client load of 75 to 80 people. So they are all involved in the production process and the evaluation is really a by-product.

AUDIENCE: How do you remove the probably subjectivity in your evaluators rating?

HILL: Simply by not asking them to do a very comprehensive job in evaluation. If you remember the factors that we are asking them to evaluate, I suppose that you could say, yes, there is a certain amount of subjectivity. For instance, just taking out one element here; attitude toward staff. Now this could certainly be very subjective.

AUDIENCE: Attitudes toward staff; How do they judge acceptable attitudes they are after?

HILL: They do not say whether it is acceptable or fair. They simply note what the client's attitude was toward the people who are working in a supervisory capacity over them.

AUDIENCE: Will you sum this all up?

HILL: We do not reach conclusions and this is one of the things I do not want the staff to do because I do not feel that they are trained to do it; I do not feel that the evaluation precess, as we know it in this particular facility, has been geared to any summation.

AUDIENCE: Who does this?

HILL: The counselor takes the information as he receives it and usually in a talk with the shop manager or the foreman on the floor can reach his own conclusion about what they have observed.

AUDIENCE: Each worker is exposed to two or three at least or more supervisory personnel. You get a concensus.

HILL: Yes, that is right. An evaluation report is always filled out. The shop manager, in conjunction with the floor people, sees that it is doned as a team rather than an individual evaluation. They staff each case. Another thing they do is to move the clients and expose them to as many job opportunities as they possibly can in the shop. You see, when you are trying to run a shop and you are trying to make the shop pay for itself, (which is a very undesirable thing in sheltered workshops), you have always to be conscious of your production goals. We have been able, as I have said here, to price our products sufficiently high so that we can afford to carry a great many slow workers; so that we can afford to do some experimenting with them and carry them a lot longer than we ordinarily would.

AUDIENCE: What types of services are available for the rehab counselor to work with their clients and where does this fit into the program? How does the counselor see the purpose of this in terms of other available services?

here; exactly why they are there, and that because they are working on this type of work doesn't necessarily mean they are going to be placed in this type of work or that if they do not do particularly well that means they cannot do anything very well. I think that they come reasonable well prepared for the experience that they are going to undergo. I do not know that its been a problem.

AUDIENCE: Do you have any other jobs other than the quality control such as dispatchers of the product?

HILL: Yes. We have a recent job from IBM; a coil, the terminals of which have to be sealed with an epoxy resin. We have two or three people who do the epoxy mixing operation. The rest of them are simply putting this resin, after it is properly mixed and prepared, into these little contacts with a medical syringe, and seal the junction up. Now, I think what you are asking, are these people doing a job that is not strictly concerned with the production of these things. Are they in a service job?

AUDIENCE: Is the maintenance done by supervisory staff.

HILL: There is not really that much maintenance. A very small shop in terms of floor space is only about 4,000 square feet. We started out with about 2,000 and then expanded within the building to about 4,000, but it is fairly small. It is not a big facility where there are a lot of maintenance or custodial jobs to be done. We could not provide full-time employment for them.

AUDIENCE: What are the Vermont VR committments to your shop? You said they were not supporting you.

HILL: None at all. No, I am on the State VR Division Staff. But the rest of these people are state employees, classified state employees, but their salary is dependent on the income from the shop. And, as I say, the Legislature simply told us that we could continue to run the facility under state auspices. The Division actually runs it, but the staff jobs would only be in existence as long as there was money from contract income to support them and the shop operation as a whole.

AUDIENCE: Why don't you make this a non-profit corporation and build your own state agency?

HILL: I have been trying to create some interest in the Burlington area with a group that would take over the sponsorship of this. I do not think it is particularly appropriate for the state agency to be operating it at this point.

AUDIENCE: Why?

HILL: It is inflexible. The State of Vermont has a very low salary structure. Because of this we are being held to their pay level and this makes it hard for us to get people to run the shop. And because we cannot depend on any support other than our contract commitments, we are very reluctant to expand the program in any way. All we would need would be one slow period and the whole program would go down the drain. No, I think it should be supported as a community activity. And subsidized, as any good shop should be.

AUDIENCE: What success have you had in training workers for mobility?
HILL: In this shop, we make no effort to do it.
AUDIENCE: Do these jobs, the workshop does, remain part of the IBM operation? That is, do they have the same work being done with their own labor force?
HILL: Doing these? On some yes, on others, no. Some of these jobs have been farmed out not only to us, but to other companies in the area.
AUDIENCE: Would you say that your workers are more productive than the regular workers?
HILL: Well, let me say this. They exceed IBM's own production standards on some operations by, 50-100 per cent. I would say a good per cent of our workers are exceeding IBM's own production standards on certain operations.
AUDIENCE: Is the workshop pay scale competitive with IBM's?
HILL: It is roughly competitive for this particular type of operation. They do not have too many of these in their plant. These would be the lowest paying jobs in the IBM plant. And so, I think, this is one of the reasons they are trying to get them out of there. Our pay scale is competitive with other contractors in the area doing similar work for IBM, sometimes above.
AUDIENCE: How is theirs established? Do you have any idea?
HILL: We conduct time and motion studies. We have found that IBM's are quite liberal. They're lower than ours would have been if we had set our own.
AUDIENCE: Do you think IBM studies are unrealistic?
HILL: No, I do not think they are. I have watched them over there doing the same jobs and they just are not turning out the work that we are turning out.
AUDIENCE: Are your referrals just from the Burlington area?
HILL: No. These come from any counselor in the state.
AUDIENCE: How does the counselor learn about the client's progress besides from the written report?
HILL: He does this on the phone if he is not immediately available. Counselors from the southern part of the state, and we are talking about distances of probably 150-160 miles, about once a week will call up and spend as much as an hour on the phone with the shop manager and the shop supervisory person discussing the report he just received and what it means in terms of his client's performance there.
AUDIENCE: Does the counselor come in regularly to see his client?
HILL: While he is there? Generally not, not if the client is from the southern part of the state, for instance, where 150 miles separates them from the shop.
AUDIENCE: Did you say the minimum wage is $1.25 an hour?
HILL: Yes.
AUDIENCE: What happens if a person if found after two or three weeks to be producing at their maximum $.60 an hour?
HILL: We pay them $1.25.
AUDIENCE: How long could this continue?

HILL: Oh, we may keep them there as long as six or eight weeks and we have kept them as much as three or four months paying them a minimum, which is maybe twice as much as they are actually earning.

AUDIENCE: Why do you pay them the sheltered workshop wage?

HILL: Well, in the first place because these people are not living in residential facilities, because we do not have any dormitory facilities for them. When they come to the shop, they have to arrange for their own living accommodations with the help of their counselor. Our feeling is that if we have a person that is a low producer and we know that we are not going to be keeping him, but are providing the evaluation service, we feel we ought to be paying at the minimum wage which is a wage that makes it possible for him to sustain himself while he is there. In a purely production oriented shop, we feel that the statutory minimum should be the actual minimum. If, after a reasonable time it cannot be attained, termination is indicated and the on-the-job evaluation has served its purpose.

AUDIENCE: Then the people that come there are not necessarily from Burlington?

HILL: No, they are from all over the state.

AUDIENCE: What percentage find jobs, or the Rehab finds them jobs?

HILL: Well, this has not been too good. As I have said, we have too many that remain at the shop. I cannot tell you how many have moved from the shop into employment. A great many have moved from the shop into some other kind of training or evaluation. Many of them have stayed right on at the shop, but I cannot tell you how many.

AUDIENCE: Going back to this other question. Since your shop is acquired by law as self-supporting....

HILL: Not by law. By administrative edict.

AUDIENCE: Since you pay the clients who earn only $.60 an hour, $1.25 per hour, this would mean for me, maybe I am drawing the wrong conclusions, that your good worker is supporting your poor worker.

HILL: In a sense he is, but we have been able to price our jobs in such a way that our percentage of mark-up over the base labor rate is pretty liberal. And generally speaking, the subsidy comes from this,not from the efforts of faster workers.

KARL EGERMAN: One of the problems, at least I think we have here in Johnstown, maybe some other people have it in the cities that they come from, is the fact that a lot of the civic groups and businesses in their own areas do not lend very much, if any at all, support to the operation that we are trying to promote. You told me a rather heart warming story about one transportation company in your city, which I think these other people might be quite interested in hearing.

HILL: We leased this particular building, which is about seven miles from the center of the city of Burlington, and is probably about four or five miles from the end of the bus route that comes down in that direction. To start with, we had to transport the clients ourselves from the shop up to the nearest bus stop and the bus then got them back into the city. So, I went to the bus company and explained our problem. As a result, the bus company very kindly extended their route down to the shop, without asking me how much use it was going to get. They hoped that we would make as much use of it as possible and not depend on car pools for transportation because it was going to be costing them money if they did not get patronage. Initially they did not get enough usage, but continued to cooperate very nicely. When we had night shifts, they even said, "our last bus runs at 11:30, but we will come down at 1:00 at the end of this run to pick up your people, and on our way back to the terminal we will go all around the city of Burlington and drop them off at convenient stops." A very understanding group of people.

AUDIENCE: Then you ask, why would anybody want to leave?

HILL: Well, they have been very good to us.

AUDIENCE: You talked about putting a counselor in the shop, who would be available for counseling . . . .

HILL: Well, speaking from the agency point of view, we cannot afford it right now. And speaking from the shop point of view, I do not think, we could afford that either. I do not think the overhead would allow us to carry this much of a burden, to support the agency program. I do think we are going to have to do some of these things later on. This shop grew like Topsy, and when you are a very busy people trying to run a production facility, you begin to think of the production aspects of the shop before you think of these other things. The further we go into it, the more we can see the need for many supporting services, and this is one of them.

AUDIENCE: Do you do any other mental conditioning of the workers, such as leaflets, literature, films, or anything of this nature?

HILL: Not at all. They are not there on off-hours, they come to work in the morning at 8:00 and are through at 4:30 in the afternoon. The shop is out in the country, and we do not have a lecture hall or a recreation area. Every single bit of space that is available is used for the shop production itself. All conditioning is provided by the counselor. In many cases a preliminary visit is arranged. Formal, structured orientation is badly needed.

KARL EGERMAN: Dick has been very honest in describing his facilities. When I was up there this week going from the capital of Vermont back up to Burlington, through the lovely hillsides of New England, and we came into a very nice residential area into what looked to me to be a ranch-type house, and maybe a double. I was looking around for the workshop, and Dick said, "well, there it is." We walked into a very attractive building, very clean, all on one floor, air-conditioning, and a two-door loading dock; and everyone makes $1.25 an hour, and the civic groups in town cooperate. Why, that is a golden place to work!

DETERMINING THE LEVELS OF VOCATIONAL CAPABILITY AND EVALUATING JOB POTENTIAL

William Steiner

Supervisor, Vocational Evaluation Unit
Pennsylvania Rehabilitation Center

The Evaluation Department as the Pennsylvania Rehabilitation Center is administratively located within the Counseling Service Unit, which includes Counseling, Case Management, and Vocational Evaluation. The goals of the Evaluation Department are to evaluate the vocational potential, to describe the individual vocationally, and to help the client achieve greater self-understanding and a more realistic vocational outlook.

Clients come to the Center from twelve district offices of the Pennsylvania Bureau of Rehabilitation, other states, other agencies, insurance companies, and as private individuals. We work with nearly every disability group except the blind. We are currently working on a program for the visually handicapped. There are several ways of classifying clients who come to the Pennsylvania Rehabilitation Center. One way would be by disability. We have the orthopedic, the mentally retarded and the neuro-psychiatric. There is still another way of classifying clients, this is by functional classification according to vocational objective. We have then the physical restoration case, evaluation is of little concern. These individauls come to the Center for Occupational Therapy, Speech Therapy, or possibly Physical Therapy, or combinations of these services. If no vocational objective is in view for physical restoration cases, then perhaps evaluation services may be sought, but usually these admissions return to former employment. The training case has a vocational objective already established before coming to the Center. This is done by the referring agency or the field counselor. The evaluation case, then, we are most concerned with.

A BIT OF HISTORY

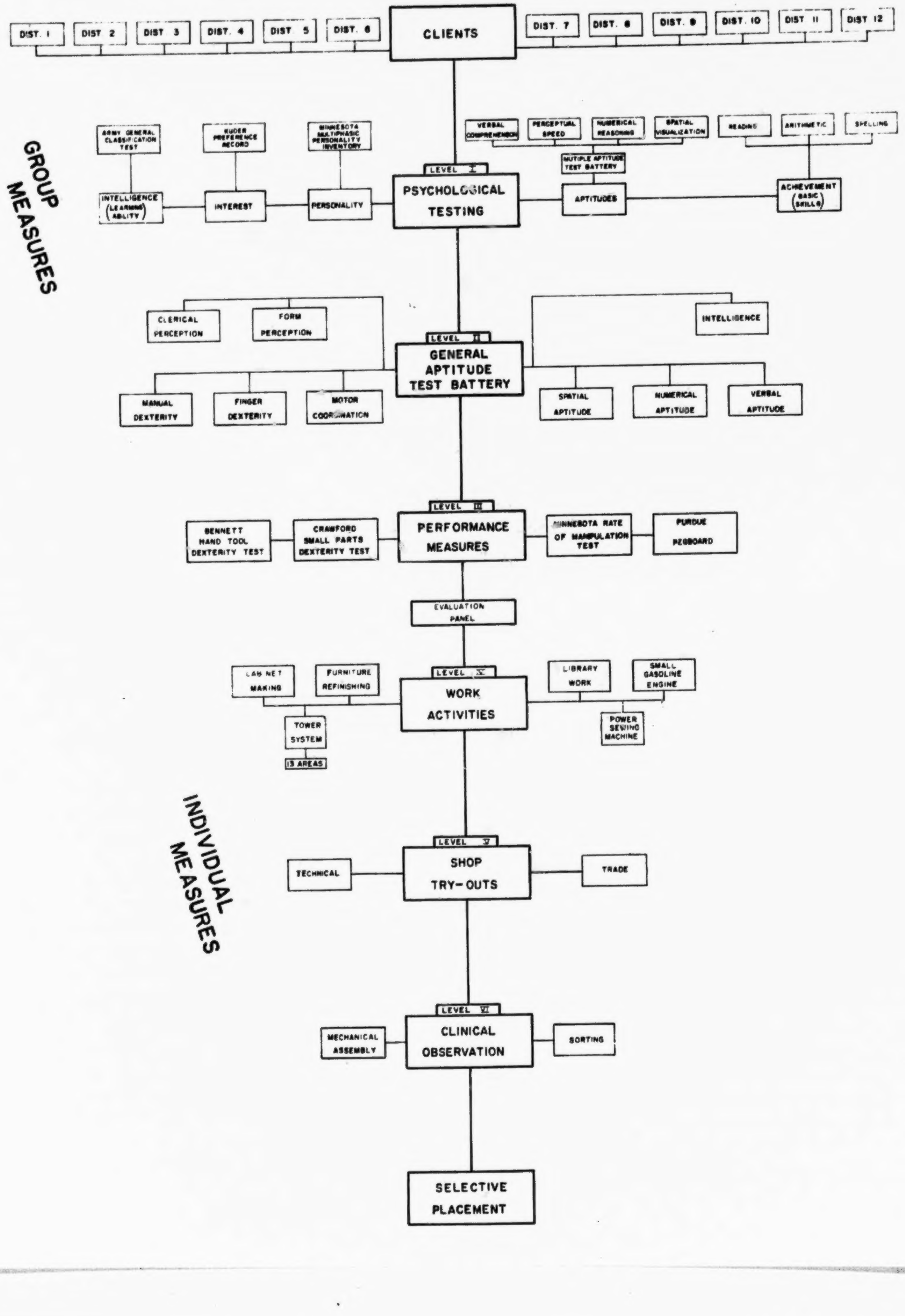
When the Center first opened in 1959, a purely job tryout approach was utilized in the process of vocational evaluation. Job tryouts were selected in a relatively trial and error fashion with clients being placed in several vocational shops, usually ones of their choice for one or two week periods. The instructor in the course made judgments about the client's ability to do the work and a selection of vocational objectives was made from the shops giving favorable reports. Some difficulties were encountered with this method. First of all, it was very time consuming and there was little generalization to the overall potential of the individual. Observations were made by relatively untrained observers who had no way of determining whether or not a person would be able to complete a course. Many times it was found that work ability would plateau because of learning problems, even though the client may have done well initially in the program. With the hiring of an occupational therapist, the emphasis was directed towards the work sample technique and the "Tower system." One might say a work sample is a device in which certain critical aspects of a job are administered and performance measured in another than actual job situation. For example, we can have sewing, shoe repair, filing, mail sorting, mechanical assembly, etc. Some drawbacks are encountered in this method also. Many work samples require considerable prior learning before an assessment of speed or work quality can be made. Also, there is a limited number of work examples in which a person can perform because of physical space limitations, since there are many thousands of jobs to be sampled. There are also geographical limitations. We serve people from throughout Pennsylvania and neighboring states. We could not possibly house the appropriate work samples for all jobs represented by people from all areas.

THE PRESENT APPROACH

Your attention is directed to level on the chart, "Process of Vocational Evaluation," that follows on the next page. Our present evaluation program begins at level one with the psychometric testing. This is completed the first week along with the orientation program to the Center activities. We gather information about reading ability, interests, general learning ability or intelligency, personality, mechanical aptitude, general aptitudes, including verbal comprehension, perceptual speed, numerical reasoning, and spatial visualization. We also give a mechanical aptitude test to males only. Training cases, as mentioned earlier, progress only this far. We administer this test battery to the training cases in order to keep in touch with the population of individuals we are serving, and also, to generally compare the abilities with job requirements before they are placed in a training course. More often than not, however, we honor the District Counselor's selection of a vocational objective and place

PENNSYLVANIA REHABILITATION CENTER

PROCESS OF VOCATIONAL EVALUATION


DIST. 1
DIST. 2
DIST. 3
DIST. 4
DIST. 5
DIST. 6
CLIENTS
DIST. 7
DIST. 8
DIST. 9
DIST. 10
DIST. 11
DIST. 12
GROUP MEASURES
ARMY GENERAL CLASSIFICATION TEST
KUDER PREFERENCE RECORD
MINNESOTA MULTIPHASIC PERSONALITY INVENTORY
VERBAL COMPREHENSION
PERCEPTUAL SPEED
NUMERICAL REASONING
SPATIAL VISUALIZATION
READING
ARITHMETIC
SPELLING
MUTIPLE APTITUDE TEST BATTERY
LEVEL I
INTELLIGENCE (LEARNING ABILITY)
INTEREST
PERSONALITY
PSYCHOLOGICAL TESTING
APTITUDES
ACHIEVEMENT (BASIC SKILLS)
CLERICAL PERCEPTION
FORM PERCEPTION
INTELLIGENCE
LEVEL II
GENERAL APTITUDE TEST BATTERY
MANUAL DEXTERITY
FINGER DEXTERITY
MOTOR COORDINATION
SPATIAL APTITUDE
NUMERICAL APTITUDE
VERBAL APTITUDE
LEVEL III
BENNETT HAND TOOL DEXTERITY TEST
CRAWFORD SMALL PARTS DEXTERITY TEST
PERFORMANCE MEASURES
MINNESOTA RATE OF MANIPULATION TEST
PURDUE PEGBOARD
EVALUATION PANEL
LEVEL IV
CABINET MAKING
FURNITURE REFINISHING
WORK ACTIVITIES
LIBRARY WORK
SMALL GASOLINE ENGINE
TOWER SYSTEM
13 AREAS
POWER SEWING MACHINE
INDIVIDUAL MEASURES
LEVEL V
TECHNICAL
SHOP TRY-OUTS
TRADE
LEVEL VI
MECHANICAL ASSEMBLY
CLINICAL OBSERVATION
SORTING
SELECTIVE PLACEMENT

the individual in trianing even though he may be a marginal candidate. The second week of testing begins with the General Aptitude Test Battery. This is level two on your chart. This measure serves two important functions which are not served by the previous testing. First of all, it allows us to relate aptitude factors directly to predictions to job success by means of occupational aptitude patterns and also, secondly, it measures dexterity. Some of you probably know that this test was developed by the United States Employment Service and is used in the Pennsylvania State Employment offices. We have a special contract with the Pennsylvania State Employment Service in order to administer the test.

The test, itself, consists of a battery of twelve short, speeded sub-tests. These sub-tests give us scores on nine aptitude factors which include, general learning ability or intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor coordination, finger dexterity, and manual dexterity. These aptitude factors are considered in various combinations of three. With cut-off scores at various levels, a person may meet, if his scores are high enough, one or more of thirty-five occupational aptitude patterns, each of which suggest a variety of occupational areas in which a client's chances for success are about three out of four. This is a very important part of our testing program. After these standardized tests, the client is interviewed, test results discussed and an individual evaluation program planned, utilizing background information obtained from the case record, medical information from former and current medical examinations and any other vocationally significant information.

At this point, we may have what we call a "GATB" referral, "GATB" standing for General Aptitude Test Battery. Our program is designed to meet the needs of the individual. We work with people who have a wide variety of abilities and disabilities, the M.R. to the intelligent orthopedic disability. Knowing this, you can see that some individual would not need evaluation further than psychometric testing. In fact, about 15% of the evaluation cases can be referred to the counselor for the selection of the appropriate vocational objective after the completion of level two. The remaining cases continue for more intensive evaluation. These remaining cases need further evaluation when:

1. Scores are poor and no vocation is suggested.
2. The nature of the involvement leads the counselor or the evaluator to suspect problems in making a vocational adjustment.
3. A person's interests are ill defined.
4. The counselor feels the need to establish the nature of the client's work habits, attitude, level of motivation ability to use tools, ability to use the

prosthesis or an affected extremity, ability to follow insturctions of a written, oral, or demonstration nature.

5. It is felt necessary to investigate capacity for learning simple motor skills, such as in the case of a cerebral palsy or hemiplegic individual.
6. Any question arises from the client, counselor, evaluator, or other staff member concerned with the client's vocational potential.

We progress through the process only as far as is necessary to establish vocational goals. A great amount of responsibliity is placed upon the counselor-evaluator team in this decision making process.

At level three on your chart, you will notice performance meausres. These measures include more highly individualized testing which not only involves dexterity tests, but also other achievement tests. The dexterity test might include, Bennett Hand Tool Dexterity Test, Crawford Small Parts Dexterity Test, Minnesota Rate or Manipulation, or perhaps, the Purdue Pegboard. We may also at this level use the Wide Range Achievement Test, The Metropolitan Achievement Test, or the School and College Ability Test. Other measures such as the Maitland-Graves Art Design Judgment measure and the Bennett Test for Mechanical Comprehension may be used. For example, the client may be considering office machine repair, but his dexterity is questioned on the basis of General Aptitude Test Battery scores and further testing seems to be indicated. Dexterity testing can be done, along with observation to investigate the feasibility of this particular client and the advisability of pursuing a course of training.

At level four, we have the work activities. These involve a continued individualization and intensification of the process. This stage includes a variety of work sample-like activities on which a client performs while observations are made concerning his performance. Vocationally significant, subjectively evaluated factors are considered, such as the ability to follow instructions, to use tools, to use a prosthesis, his attitude and motivation, etc. Generally, we are evaluating the type of worker the client is. The work activities are selected according to questions about the client's vocational skills which do not appear answered by information gathered by other means. Examples of work activities would include, parts of the Tower System, including the Clerical, Sewing, Drawing and Lettering activities. In the cabinet making work sample, we can determine how well the client measures, how well he handles tools, whether he has an appropriate use of tools, how well he follows written and oral instruction, what the level of his independent judgment is, and can he learn from his mistakes. On the gasoline engine, we can observe his use of mechanical tools and his familiarity with parts and operation.

You will notice the insertation on the chart labeled evaluation panel. This panel may appear at any point from there down in the process. The clients in evaluation are placed on a list with the person in evaluation longest on the top of the list. Cases are discussed weekly by counselors and evaluators in attendance. Problems and progress are reviewed in the evaluation process. This panel serves to facilitate case movement as well as to allow for particular counselors or evaluators to benefit from the experience of the group program planning and decision making.

Shop tryouts are used on a very selective basis to provide information not obtained through previous means. They are used when:

1. Other measures indicate prognosis of only marginal success.
2. Behavior suggests problem areas. Many times the client will identify strongly with the more realistic job tryout setting and consquently perform more appropriately than he would in the evaluation unit setting.
3. There are questions about the client's motivation or work habits.
4. The person's interest or degree of knowledge about the job is uncertain.
5. As a reality test if the client is non-realistic and will consider nothing else until given a chance in a particular area in question. The evaluators try to ask specific questions about what the client can and cannot do in the particular area.

Clinical observation is the final level listed on the evaluation process chart. Observations are important, thoughout the evaluation program, but careful observation on routine, repetitive operations, such as mechanical assembly and sorting often provides a clue to the type of activity a severely disabled individual might best seek. Many times, through observations made, selective placement recommendations are established for sheltered workshop, homebound employment or work with a benevolent employer who may be willing to accept a particular limitation of a client, still using the skills he has to offer.

Not all persons have the same evaluation program. They do not spend the same amount of time in the process. The average time is approximately four weeks, with a minimum of two weeks and up to two or three months, depending on the individual's needs. With about 15% of our evaluee's we are able to establish a vocational objective after level two, another 60 to 60% after levels three through five, and the remainder have recommendations made after progressing through the most individualized part of the process.

There has been a general streamlining of the evaluation process since the opening of the Center. We feel that we have a more efficient and a more effective program. This is part of an overall effort to give the most appropriate service to the most people per year. With the original job tryout approach to evaluation, about 100 to 150 clients were served per year. The work sampling system allowed for the evaluation of 200 to 225 clients per year. The present system expedites service to 550 to 600 clients per year. 75% of the Center's admission are for evaluation services. We have a 6 to 8 month waiting list for evaluation, illustrating a demand for this particular type of service in Pennsylvania.

THE REPORT

An evaluation report is written on all clients who enter the evaluation process. This report is our only tangible product and it communicates our findings to the Center counselor and the field counselor, who originated the case. It consists of four sections: Background Information, Test Interpretation, Behavioral Observations, and Summary and Recommendations.

Within the Background Information section, factors significant concerning the disability are mentioned. This may include the medical picture, handicapping features, comments on work tolerence, and any special appliances or assistive devices. There is also, usually a section on education and employment, as well as social history, if obtainable. In the Test Interpretation Section, we report test results in ranges and what the different tests mean. We indicate significant factors to which the tests point such as mechanical aptitude, clerical ability, or whatever. In the behavioral observations section, we report vocationally significant, subjectively evaluated factors such as: appearance, grooming, dress, motivation, attitude, initiative, manner in relating to the evaluator and to others, level of independent judgment, ability to use tools, prosthesis, or affected extremity. They also report work activity areas in which a person was tried and the results of these efforts. The Summary and Recommendations section is probably the most important part of the report. Here we draw together the significant information about the client effecting vocational potential. We summarize test results, observations, and background. The 5 major areas most commonly recommended as a result of vocational evaluation are:

1. Vocational training at the Center
2. Training at other facilities.
3. Selective placement, with skills already available.

4. Continued education, such as finishing high school or going on to college.
5. Sheltered workshop-work adjustment when a person could not enter the competitive labor market.

We implicitly attach probability of success to the various things recommended by qualifying statements. This is the major use of the behavioral observation section. For example, this state might appear in this section of the report. "The client may perform in the office machine repair area, if his math and reading can be improved. He would be best only as a helper in mechanical repairing trades with his present level of ability. The clerical areas are to be eliminated on the basis of interest, but also on the basis of low scores in clerical perception and verbal aptitude."

SUMMARY

In summary then, we generally consider four major areas about the client's personal vocational ability.

1. Intelligence or academic ability.
2. Dexterity or upper extremity functioning.
3. Personality factors, motivation, and desire for work.
4. Disability, the functional limitations.

The client's level of functioning in each of these four areas is judged against the frame of reference of occuaptional requirements such as found in the Dictionary of Occupational Titles. This would include the professional, technical, service, skilled, semi-skilled, unskilled employments. Recommendations are made with the appropriate qualifications. Our practice has been to recommend with qualifications, areas where there is marginal potential so that the client will at least be given an opportunity to try. Our recommendations, of course, cannot be made on the basis of interest alone. We simply point out to the client and to his counselor, areas in which he may be successful. This may be called vocational description. The counselor, in turn, assists the client in establishing a specific vocational objective.

QUESTIONS AND ANSWERS

QUESTION: Do you use The General Aptitude Test Battery on all clients?
ANSWER: On all the clients that come for evaluation. That is right.
QUESTION: What approximate numbers can you recommend directly for placement?

ANSWER: About 15% after the testing. Now this number is really a little lower than this now. There has been a tremendous shift in the type of population we have been getting. When I first came here about three years ago, we had a greater number of orthopedic disabilities, physical disabilities, and there has just been a tremendous shift to about 60% to neuro-psychiatric and mentally retarded. That is what we are handling now. So we are going to have to adjust our evaluation program and we haven't done this because of staff shortages, and just keeping up with the demand for evaluation services.

QUESTION: What is the proportion of success that the Rehabilitation Center has in picking out a vocational objective for a student and getting them trained to the place as opposed to the success the field counselor has when he prescribes help in the training area?

ANSWER: We have been approximately 75% successful with our evaluations. This is not based on any real carefully controled study. But in general survey we found that about 75% of our people that we evaluate can be established in some sort of employment after training. Whereas, the field counselor sending the person in for training is only about 50% successful.

QUESTION: Is the Level 1 testing done here in addition to District testing?

ANSWER: There are many, many tests the trainee gets before he gets through this program. In the district about 80% of the people who come to the Center get WAIS's from the district so we don't have to do that, in fact we don't have a psychologist functioning as a psychologist on our staff. We do this other testing because we are most familiar with this testing, we are most comfortable with it. We can gather standard types of information about everyone because many times people coming in from the outside have a variety of tests that we are not really too familiar with or that really are not the same kind of tests, so we have no comparison between them. This is why we gather these standardized types of statistics on them.

QUESTION: Do you get the WAIS sub-test scores with the client?

ANSWER: Sometimes we do, but not in every case, however. We do have two people on our staff who do give the WAIS under the auspices of the psychologist.

QUESTION: Who are your evaluators?

ANSWER: The evaluators here at the Center are all Master's Degree rehabilitation counselors, hopefully, with a background in psychology. When I first took over the department, we had two people. Then it was up to four. Then we had a real exodus to California and there was a lot of real recruiting went on at the 1964 Convention, when we lost a lot of people. Since then our salaries have come up a little bit, and we are able to attract more people; we are up to five people in the department including myself, and I carry a half case load. But they are all Master's Degrees in Rehabilitation Counseling. They are all from Penn State, incidentally. We have an internship program with Penn State.

QUESTION: What do you do if you have a client and his scores do not indicate any reasonable vocational prognosis?
ANSWER: We have a relatively involved process for handling a case like this. If the scores don't tell us too much about him, we will head for the work activities area to find out some of the vocationally significant material, subjective or evaluative as I have mentioned. Generally find out what kind of a guy he is, get to know him a little bit, find out what his aspirations are, and if he is really an MR and he is not going to be able to handle too many types of technical or trade areas. We may, if he is aspiring to it, give him some tryouts in the technical or trades areas if there is any chance at all. If there isn't too much of a chance, and he is more or less realistic, we may try him out in one of our services areas. These are the areas of sewing machine operation, which is good for the girls, the laundry, the kitchen, and the domestic areas. And sometimes groundskeeping in the maintenance areas. But, other than that we are not too well equipped to handle a large proportion, at least not the large proportion of mentally retarded clients, that we are getting now.
QUESTION: Do you have any norms you have developed here?
ANSWER: We have a wealth of information in our files, but no one has had time because of this case service demand to sit down and actually do a study, and which with any kind of predictive study, is really what you are implying here. This is one of my great, needs I think, a real felt need that I have, to do this, to develop some other activities, especially for the mentally retarded. Perhaps some sorting activities, we have some sorting now, but it is less than I think we should, really to adequate. But we just don't have, we have academic types of things to evaluate people on, instead of the more or less routine or repetitive operations. I think, we could learn a lot from visiting the workshop situations; because we are getting this rather large proportion of mentally retarded clients who have work adjustment problems too.
QUESTION: Do you get enough feedback from the district office?
ANSWER: Not really. We get a list of people, who have come through the Center, and their jobs. And so we could do some validation studies in this way to find out whether they are working or not. But the follow-up is not adequate either. We don't get every case so that one could do a comprehensive type of follow-up study.
QUESTION: Yesterday Dr. Cobb was reviewing some of the research that had been done and pointed out that the client-evaluator relationship, but I am sure it is in some way significant. I don't know what kind of predictor variables you would want to get into, whether it would be a rating form or a questionaire type of thing or what. But I really don't know what significance this is in our establishment here. We both have a counselor and an evaluator, who have a relationship with a particular client. And he may go to one with one type of story and to the other with another type of story. We have found this in certain instances. I had one

man who would go to the counselor and simply cry his head off. I didn't see any of this behavior in the evaluation unit. He saw me as a different type of individual, perhaps it was because of the nature of the environment of the evaluation. Also, it was not as easy to cry in my office because there were large windows as it was in the counselors' office where there was no access to this or perhaps other factors in the counselor-client relationship, but I do not have anything significant.

TEST DESCRIPTIONS

The Evaluation Department administers the G.A.T.B. to every trainee referred for evaluation. If Occupational Aptitude Patterns are met on the G.A.T.B., the trainee is referred directly to Counseling. If the trainee fails to meet such patterns, he is kept for a more extensive evaluation. Such evaluation includes the administration of a number of performance tests as well as an arithmetic knowledge and information test. Work samples are also administered when feasible.

The administration of performance and achievement tests gives the Evaluator some objective information on the trainee's abilities and disabilities, and enables him to make an evaluation which is not entirely subjective.

The results of these performance and achievement tests are included in the Evaluator's reports in order to give the Counselor some objective data on trainee performance. The following is a list of test descriptions that will be an aid to interpreting these test results.

MULTIPLE APTITUDE TESTS

Publisher: CALIFORNIA TEST BUREAU

Authors: David Segal and Evelyn Raskin

Factor Groupings

- I. Verbal Comprehension
  - Test 1. Word Meaning
  - Test 2. Paragraph Meaning
  - Test 3. Language Usage
- II. Perceptual Speed
  - Test 3. Language Usage
  - Test 4. Routine Clerical Facility
- III. Numerical Reasoning
  - Test 5. Arithmetic Reasoning
  - Test 6. Arithmetic Computation
- IV. Spatial Visualization
  - Test 7. Applied Science and Mechanics
  - Test 8. Spatial Relations - Two Dimensions
  - Test 9. Spatial Relations - Three Dimensions

General analysis of test items:

Test 1. Word Meaning - Examinee is asked to select one of four words which most closely resembles the initial stimulus word in meaning. The test is overloaded with adjectives in preference to other parts of speech.

Test 2. Paragraph Meaning - Examinee is asked to read a paragraph and answer questions of content and interpretation. Four or five of these eight paragraphs are loaded in favor of the social sciences. Previous reading in the social sciences will probably have a positive influence on the score. Many of the questions could be answered without even reading the paragraph. It can be inferred that the specialized reader is given an advantage.

Test 3. Language Usage - The examinee is asked to identify the parts of the sentences which contain errors in grammar, spelling, punctuation, and capitalization. Most of the sentences contain one or more errors, although there are two sentences without any errors. This test is supposed to measure both verbal comprehension and perceptual speed, but it gives no method of determining whether individual items are missed because of a lack of verbal ability or a lack of perceptual speed. This leaves us with a pair of muddy factors.

Test 4. Routine Clerical Facility - Measures the individual's rate and accuracy in checking likenesses and differences in names and numbers. The authors call this a speed test rather than a power test.

Test 5. Arithmetic Reasoning - Each item consists of a verbal description which gives the essential facts of the problem followed by four possible answers. The examinee is asked to indicate which of the four answers is correct.

The problems involve the following mathematical functions:

1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Use of formula
6. Substitute Number Systems
7. Use of Scales
8. Interpretation of Procedures

The following elements are used in these problems:

A. Whole numbers
B. Fractions
C. Decimals
D. Percentage
E. Common currency
F. Square Measure
G. Cubic Measure
H. Pounds and Ounces
I. Linear Measure

Test 6. Arithmetic Computation - The examinee is asked to work out his answer to the problem and then indicate which of four given answers is correct.

The functions and elements involved are as follows:

1. Addition of whole numbers, fractions, and decimals.
2. Subtraction of whole numbers, fractions, decimals.
3. Division of whole numbers, fractions, and decimals.
4. Multiplication of whole numbers, percentage, fraction, and decimals.

The functions and elements involved are as follows: (cont'd)

5. Ratio and proportion.
6. Identifying the relationship of one number to another.
7. Changing written verbal numbers to symbols.

Test 7. Applied Science and Mechanics - A series of multiple choice questions on the nature of fluids, gases, and machines as applied to relatively familiar situations. Prior learning through science courses of mechanical experience will tend to elevate the score. This tends to measure the quality and effectiveness of previous exposure to content of this nature. This may give us, at the most, a crude index of preparedness for future learning of this type.

Test 8. Spatial Relations - Two Dimensional

A series of multiple choice items in which the completed figure is given the examinee and his task is to select the appropriate cluster of two dimensional parts which, when assembled, form a figure congruent to the original completed figure.

Test 9. Spatial Relations - Three Dimensions

A series of multiple choice items in which the completed three dimensional figure is given and the examinee is asked to select the one of four two-dimensional patterns which, when constructed, would form the completed figure.

Critical Review

One of the worst criticisms of this battery is that there is no alternative form for retest. This tends to make the test an all or nothing situation.

The greatest claim to validity is the correlation between test scores and school grades. However, these correlations are disappointingly low. For instance, the correlation, for males, between Applied Science and Mechanics and High School Physics is only .28.

Internal consistency was emphasized at a sacrifice to pure factors.

APTITUDE TEST

GENERAL APTITUDE TEST BATTERY (G.A.T.B.)

The G.A.T.B. contains a limited number of diversified tests which can be given to everyone and which can be linked together in various combinations to predict success in different situations. It consists of 8 pencil-paper and 4 apparatus tests used to measure 9 distinct factors. The factors covered by the G.A.T.B. are as follows:

G - INTELLIGENCE: General learning ability. The ability to "catch on" and understand instructions and underlying principles. Ability to reason and make judgments. Closely related to doing well in school.

V - VERBAL APTITUDE: Ability to understand meanings of words and ideas associated with them, and to use them effectively. To comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs. To present information or ideas clearly.

N - NUMERICAL APTITUDE: Ability to perform arithmetic operations quickly and accurately.

S - SPATIAL APTITUDE: Ability to comprehend forms in space and understand relationships of plane and solid objects. May be used in such tasks as blueprint reading and in solving geometry problems. Frequently described as the ability to "visualize" objects of 2 or 3 dimensions, or think visually of geometric forms.

P - FORM PERCEPTION: Ability to perceive pertinent detail in objects or in pictorial or graphic material. To make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.

Q - CLERICAL PERCEPTION: Ability to perceive pertinent detail in verbal or tabular material. To observe differences in copy, to proofread

Q - CLERICAL PERCEPTION: (cont'd)

words and numbers, and to avoid perceptual errors in arithmetic computation.

K - MOTOR COORDINATION: Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make a movement response accurately and quickly.

F - FINGER DEXTERITY: Ability to move the fingers and manipulate small objects with the fingers rapidly or accurately.

M - MANUAL DEXTERITY: Ability to move the hands easily and skillfully. To work with the hands in placing and turning motions.

Success on the G.A.T.B. is highly dependent upon one's speed; the working time for paper-and-pencil subtests being close to 6 minutes each. The raw scores on the 9 factors are converted into standard scores with a Mean of 100 and a S.D. of 20. In general, the G.A.T.B. has proved to be one of the most successful multiple aptitude batteries in current use.

PERFORMANCE TESTS

BENNETT HAND-TOOL DEXTERITY TEST:

The Hand-Tool Dexterity Test is designed to provide a measure of proficiency in using ordinary mechanics' tools. Although performance is undoubtedly influenced by the subject's past experience in handling tools, the test was constructed so as to maximize the role of manipulative skill rather than mechanical information and/or "intelligence". The task is simply to remove all the nuts and bolts (of different sizes) from the left upright and mount them on the right upright in a prescribed sequence. The score is the total time required to complete this task.

This test correlates .46 with performance of machinists.

CRAWFORD SMALL PARTS DEXTERITY TEST:

The Small Parts Dexterity Test is a performance test designed to measure fine eye-hand coordination. In Part I of this test, the subject uses tweezers to insert pins into close-fitting holes, and then places a small collar over each pin. In Part II, small screws are placed in threaded holes and screwed down with a screwdriver. The score is the time required to complete each part. Split-half reliability co-efficients between .80 and .95 are reported for the two parts of this test. Despite the apparent similarity of the functions required by Parts I and II, the correlations between the 2 parts ranged from .10 to .50 in several industrial and high school samples, with a median correlation of .42.

MINNESOTA RATE OF MANIPULATION TEST:

The Minnesota Rate of Manipulation Test is designed to measure native speed capacity of eyes with hands and fingers in shop and office occupations, where it is necessary to execute quick movements in the handling of simple tools and production materials without the necessity of selecting different shapes and sizes. In a sense this test measures relatively simple muscular reaction to visual stimuli. Precision of eye-hand coordination is not an important factor, but the speed of gross arm and hand movements is significant.

The test consists of a board containing 60 circular holes into which 60 cylindrical blocks are to be placed (Part I). In the second part of this test, each block is removed from the board, turned over with the other hand, and returned to its hole. The score is the amount of seconds it takes to do the "placing" or "turning" test four times. A correlation of only .57 was found between the "placing" and "turning" parts of this test.

PURDUE PEGBOARD:

The Purdue Pegboard is a speed test which consists of inserting pins into small holes, first with the right hand, then with the left, and finally with both hands together. In another part of the test, pins, collars, and washers are assembled in each hole by using both hands simultaneously. The subject is given three trials on each part of the test. The score is the number of parts properly placed during a prescribed time limit.

This test is said to provide a measure of two types of activity, one requiring gross movements of fingers, hands, and arms, and the other involving "tip of the finger" dexterity needed in small assembly work. The Assembly Test would be the most accurate measure of the latter activity.

ACHIEVEMENT TEST

TIEDEMAN ARITHMETICAL KNOWLEDGE AND INFORMATION TEST:

This test is an individual and/or group test which measures objectively one's ability to respond to arithmetical problems involving a wide variety of applications of arithmetic fundamentals. It can be used as:

1. A survey test of arithmetical knowledge and information for grades 7 through 13.
2. An instrument for the selection and classification of applicants for jobs or positions in business and industry in which the knowledge and application of arithmetic fundamentals are important.

The Tiedeman consists of 90 items, divided into 15 groups which sample the areas of addition, subtraction, multiplication, division, problem solving, and percentage.

PARTICIPANTS

Research and Training Center Staff

Karl Egerman, Ph.D., Director
Elmer Match, Ed.D., Program Director
John E. Rabenstein, Ed.D., Director of Education & Training

Pennsylvania Rehabilitation Center Staff

Joseph A. Pauza, Administrator
Donald L. Angell, Ph.D., Chief of Evaluation & Counseling Services
George T. DeSau, Ed.D., Supervisor, Penn State Counselor Training Unit
Boyd E. Lehman, Rehabilitation Training Director
William G. Steiner, Supervisor, Vocational Evaluation Unit

Speakers

Morton Bregman, Coordinator of Professional Services
Vocational Rehabilitation Center
Pittsburgh, Pennsylvania

John Campbell, Associate Director
Vocational Guidance & Rehabilitation Services
Cleveland, Ohio

Henry V. Cobb, Ph.D., Professor & Chairman, Department of Psychology
University of South Dakota
Vermillion, South Dakota

Richard W. Hill, Acting Director, Vocational Rehabilitation Division
State Department of Education
Montpelier, Vermont

William G. Steiner, Supervisor, Vocational Evaluation Unit
Pennsylvania Rehabilitation Center
Johnstown, Pennsylvania

Attendees

Warren Bonesteel, Coordinator of Therapy
Montefiroe Hospital, Physical Medicine Department
Pittsburgh, Pennsylvania

Wallace Brown, Supervisor, Vocational Evaluation & Training
Detroit League for the Handicapped
Detroit, Michigan

Norma Campbell, Rehabilitation Counselor
Indianapolis Goodwill Industries, Inc.
Indianapolis, Indiana

W. K. Carter, Vocational Evaluator
Illinois Visually Handicapped Institute
Chicago, Illinois

Lottie S. Dannenberg, Director
Association for Retarded Children
White Plains, New York

William Daugherty, Associate Education Administrator
Curriculum in Physical Therapy, University Medical Center
University of Kentucky
Lexington, Kentucky

A. Dickerson, Counselor
Woodroe Wilson Rehabilitation Center
Fisherville, Virginia

Frances Finkler, Rehabilitation Counselor
Curative Workshop of Racine
Racine, Wisconsin

James Hagey, Supervisor, Vocational Shops & Evaluation
Ohio State University
Columbus, Ohio

Theodore Hardy, Jr., Production Supervisor
Association for the Blind of Rochester in Monroe County
Rochester, New York

Eugene Hoffman, Director of Vocational Services
Harmarville Rehabilitation Center
Pittsburgh, Pennsylvania

David C. Hunter, Rehabilitation Director
Goodwill Industries
Johnstown, Pennsylvania

Frank R. Jaron, O.T.R., Director, Prevocational Evaluation Department
Kessler Institute
West Orange, New Jersey

Dorothy L. Kester, O.T.R., Supervisor
Work Tolerance Program & Student Training Program
Wilmington, Delaware

Philip T. McCarty, Rehabilitation Counselor
Good Shepherd Rehabilitation Center
Allentown, Pennsylvania

Harold S. McTeer, Director of Personnel & Rehabilitation
Baltimore Goodwill Industries, Inc.
Baltimore, Maryland

Frederick Mee, Director, Industrial Division
Association for the Blind of Rochester in Monroe County
Rochester, New York

Roger Meece, Chief Counselor, Department of Education
Bureau of Rehabilitation Services
Frankfort, Kentucky

Dale Mullens, Counselor
Bureau of Vocational Rehabilitation
Columbus, Ohio

Julian M. Nadolsky, Vocational Evaluator
Baltimore League for Crippled Children & Adults, Inc.
Baltimore, Maryland

Joseph Napoleon, Rehabilitation Counselor
Edward R. Hohnstone Training & Research Center
Bordentown, New Jersey

Carol L. Nissley, Supervisor of Vocation Department
Edward R. Johnstone Training & Research Center

Anne Nusser, Rehabilitation Counselor
Goodwill Industries of Central Pennsylvania, Inc.
Harrisburg, Pennsylvania

Carl F. Odhner (.M.S.), Director of Vocational Services
Good Shepherd Rehabilitation Center
Allentown, Pennsylvania

Charles Parish, Rehabilitation Educator
Bureau of Vocational Rehabilitation
Columbus, Ohio

Merle B. Rosen, Work Adjustment Supervisor
Good Shepherd Rehabilitation Center
Allentown, Pennsylvania

Sanford Sackett, Director of Vocational Services
E.J. Meyer Memorial Hospital
Buffalo, New York

Linda C. Shoemaker, O.T.R., Chief Occupational Therapist & Vocational
Evaluator, Good Shepherd Rehabilitation Center
Allentown, Pennsylvania

Meyer S. Siegel, Chief, Vocational Services
N.Y.U. Institued of Rehabilitation Medicine
New York, New York

John F. Slack, Executive Director
Shut-In Society, The Pennsylvania Branch
Philadelphia, Pennsylvania

Richard M. Smith, Counselor & Vocational Evaluator
Woodrow Wilson Rehabilitation Center
Fishersville, Virginia

Samuel R. Sweeney, Jr., Training Superintendent
Opportunity Center, Inc.
Wilmington, Delaware

Michael J. Virgadamo, Rehabilitation Counselor
United Cerebral Palsy Association of Nassau County, Inc.
Long Island, New York

Charles S. Ward, Vocational Counselor
New Jersey Commission for the Blind
Newark, New Jersey

John D. Zimmerman, Executive Director
Pooprtunity Center, Inc.
Wilmington, Delaware